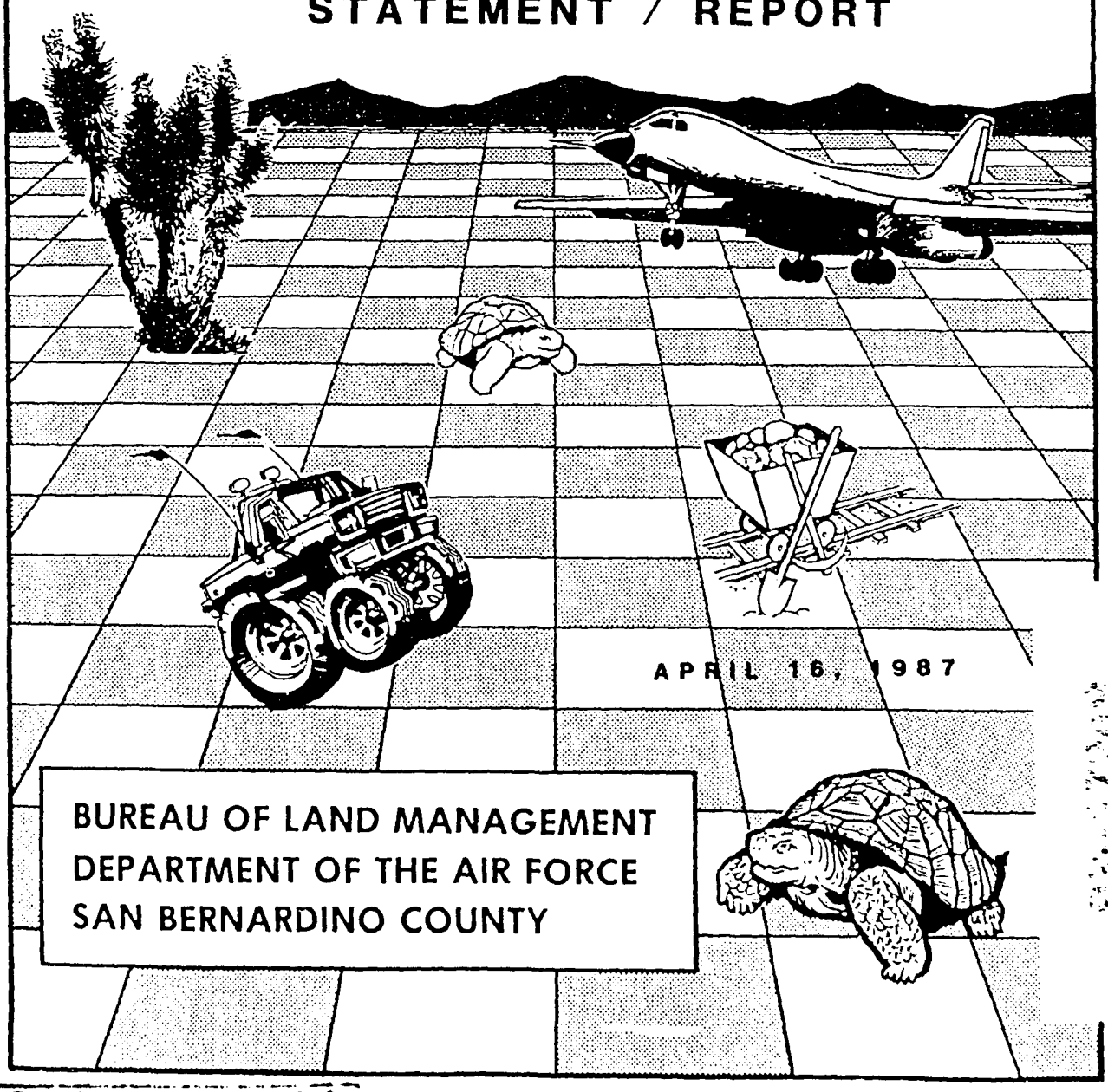
AD-A267 440

LAND TENURE ADJUSTMENT PROJECT

PRELIMINARY DRAFT ENVIRONMENTAL IMPACT STATEMENT / REPORT



APRIL 16, 1987

BUREAU OF LAND MANAGEMENT
DEPARTMENT OF THE AIR FORCE
SAN BERNARDINO COUNTY

Air Force
Environmental Planning Division
(HQ USAF/CEVP)

Room 5B269
1260 Air Force Pentagon
Washington, DC 20330-1260

16 JUL 93

MEMORANDUM FOR DTIC (Acquisitions)
(ATTN: Matt Mauby)

SUBJ: Distribution of USAF Planning Documents Forwarded on 1 July 93

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Mr. Jack Bush, GM-14
Special Projects and Plans
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COVER LETTER

(DEAR READER LETTER)

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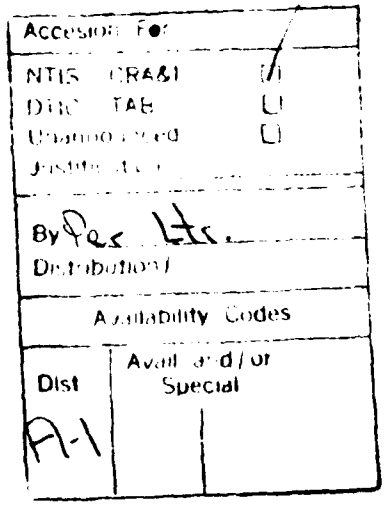

EXECUTIVE SUMMARY

INTRODUCTION

This EIS/EIR is prepared under the requirements of the National Environmental Policy Act of 1969 (NEPA) and the California Environmental Quality Act (CEQA) as revised in 1986.

The Land Tenure Adjustment (LTA) Project stems from concern of the Bureau of Land Management (Barstow and Ridgecrest Resource Areas, California Desert District, Riverside, California), Department of Defense (Air Force Flight Test Center - Edwards Air Force Base and George Air Force Base) and San Bernardino County, California. Of principal concern to the three agencies is the current checkerboard landownership pattern over the 2.8 million acres of the LTA Project Area. This pattern of landownership, where ownership changes every square mile, promotes "leap frog" development and is incompatible with the San Bernardino County General Plan to promote logical and orderly development of the county. Current landownership pattern precludes effective management of ground resources on public and private land and presents management problems with respect to existing DoD air space corridors.

Six alternatives, including a No Action Alternative, are discussed in the document. Each alternative presents a somewhat different solution to the management of the resources of concern and is discussed with reference to four central issues. These issues are: landownership pattern, multiple use classifications (public land), land use categories (private land), and public health and safety. A total of 18 resources of potential concern were identified in the preplanning analysis and public scoping process. These resources are presented and discussed under the general headings of physical environment, biological environment, human environment, and land uses and patterns.

AREAS OF CONTROVERSY

All alternatives except the No Action Alternative will result in loss of desert tortoise habitat and some losses of other wildlife species habitat. Consolidation of federal land under each alternative will facilitate greater habitat protection for many areas of desert tortoise habitat. The No Action Alternative will result in continued piece-meal losses of habitat through single parcel exchanges.

AREAS OF CONCERN

Resources which are of concern to public and private agencies, corporations and individuals are discussed under the headings noted above. Comments received during the public comment period expressed concern regarding threatened and endangered plant species, threatened and endangered wildlife species, recreation and public access, mining and mineral access, utility corridors and access, and military testing and training requirements. In addition to these areas of concern, the scoping process identified the following areas of concern with respect to resources: air, water, wildlife, plants, archaeological, cultural,

historic, Native American values, visual and aesthetic, noise, socioeconomic, range and grazing, and agricultural. A summary of impacts is presented in the table on page v.

MAJOR IMPACT CONCLUSIONS

The Land Tenure Adjustment Project under any of the Action alternatives would have negative impacts on portions of desert tortoise (habitat) in the Project Area. Portions of various grazing allotments would be negatively impacted and several sensitive plant species would be negatively impacted. Consolidation would have a positive impact on certain areas of desert tortoise habitat Areas of Critical Environmental Concern (ACECs) and the Wilderness Study Area (WSA). Cultural and paleontological resources would be better protected under various alternatives and would not be negatively impacted under any alternative. Existing laws and regulations provide protection for both cultural and paleontological resources. DoD resource values would be protected under most alternatives and public land resource values would be subject to a more uniform management under all of the action alternatives. Private land development, based on a uniform application of county land use categories would be accomplished in a more directed fashion under all of the action alternatives.

PREFERRED ALTERNATIVE

Alternative VI is the BLM and DoD Preferred Alternative. Alternative VI includes a level of benefit to all three agencies. Impacts to resource values for Alternative VI include losses of desert tortoise habitat, loss of habitat for Mohave ground squirrel and Mohave vole, loss of portions of grazing allotments, reduced protection for some cultural and/or paleontological resources, and a beneficial socioeconomic impact in Barstow and Victorville. Alternative VI would benefit each agency by promoting management of contiguous areas and the resources or resource values of concern.

SUMMARY TABLE

RESOURCES	ALTERNATIVE I	II	III	IV	V	VI
Air	4 / 4	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1
Groundwater	4 / 4	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1
Surface Water	4 / 4	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1
Geology	4	4	4	4	4	4
Soils	4	4	4	4	4	4
Paleontology	3	2	2	1	1	1
T and E Wildlife	4	4	4	4	4	4
Sensitive Wildlife	3 / 3	2 / 2	1 / 1	1 / 1	5 / 6	1 / 1
Wildlife	3	2	2	1	2	1
T and E Plants	4	4	4	4	4	4
Sensitive Plants	3 / 3	2 / 1	2 / 1	2 / 1	4 / 4	1 / 1
Plants	2	2	3	3	1	1
Cultural	3	6	2	5	5	6
Native American	4	4	4	4	4	4
Recreation / Public Access	3 / 3	6 / 6	6 / 2	6 / 6	6 / 1	6 / 1
Visual / Aesthetics	2 / 2	1 / 6	6 / 6	6 / 6	6 / 6	6 / 6
Noise	4	4	4	4	4	4
Socioeconomic	4	4	4	4	4	4
ACECs	3 / 3	2 / 1	1 / 6	1 / 1	6 / 6	1 / 1
WSA	4	6	6	6	6	6
Range / Grazing	3 / 3	2 / 6	2 / 6	5 / 6	6 / 6	5 / 6
Agricultural	4	3	6	5	5	5
Minerals	4	2	2	2	2	2
Utility Corridors	4	4	4	4	4	4
Military Testing	1 / 1	1 / 1	5 / 6	6 / 6	6 / 6	5 / 6
Impact Score	85 85	77 81	84 86	88 85	99 92	85 79

Designation Codes

1 = Resources subjected to degradation.
2 = Resources not in jeopardy, some degradation would result.
3 = Resources not in jeopardy, minimal protection afforded.
4 = No impact.
5 = Resources protected, values not enhanced.
6 = Resources benefited, enhanced protection of values possible.

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1. NEED FOR PROPOSED ACTION

1.0 LOCATION

Approximately 2.8 million acres of public and private land are involved in the Land Tenure Adjustment (LTA) Project Area located in Kern, Los Angeles, and San Bernardino Counties in the Mojave Desert of south-central California. The LTA Project Area is bounded on the north by the China Lake Naval Weapons Center, on the east by Fort Irwin Road and Interstate 15, by the Angeles National Forest and the San Gabriel Mountains on the south, and the Tehachapi Mountains on the west (see Fig. 1.1). Within the 2.8 million-acre area, approximately 521,600 acres are public lands controlled and managed by the Barstow and Ridgecrest Resource Areas, California Desert District of the U.S. Department of the Interior, Bureau of Land Management (BLM). Interspersed with the public and private lands is approximately 6,700 acres of land owned by the State of California. Additionally, the LTA Project Area encompasses about 343,000 acres withdrawn for military reservations. The LTA Project Area lies within the geographic boundaries of the Mojave Desert (see Fig. 1.2), in which the following regions have been defined (Rowlands, et al. 1982):

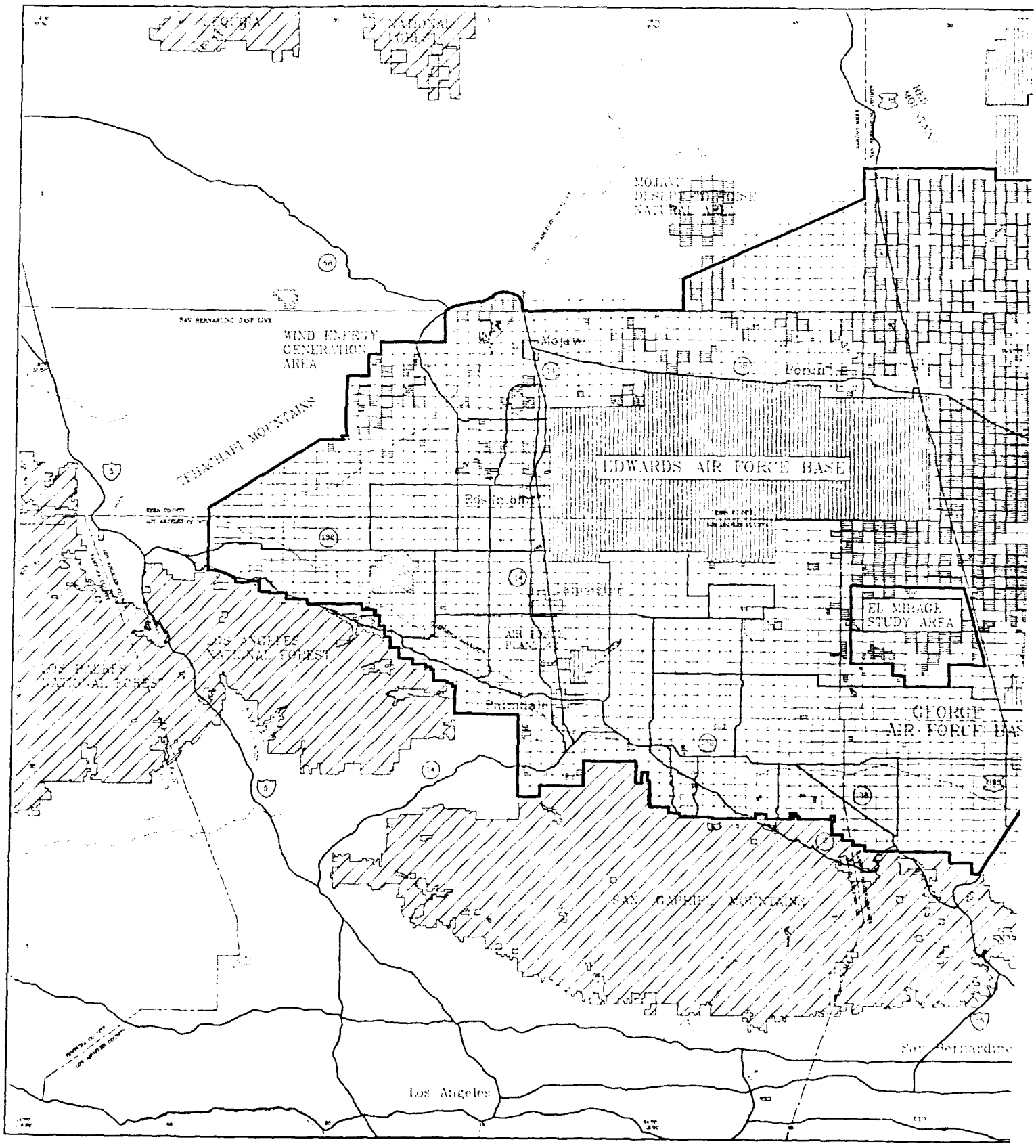
Eastern Mojave	Southwestern Mojave
Northern Mojave	Southcentral Mojave
Central Mojave	

Most of the LTA Project Area falls within the Southwestern Region with smaller portions falling in the Central and Southcentral regions (Rowlands, et al.). Elevations in the Southwestern Mojave Region range from approximately 1,970 feet to 2,625 feet; it borders the Tehachapi Mountains on the west. Historic publications refer to Eastern and Western Mojave geographic areas; the Project Area falls within the Western Mojave Area.

1.1 BACKGROUND OF THE LTA PROJECT

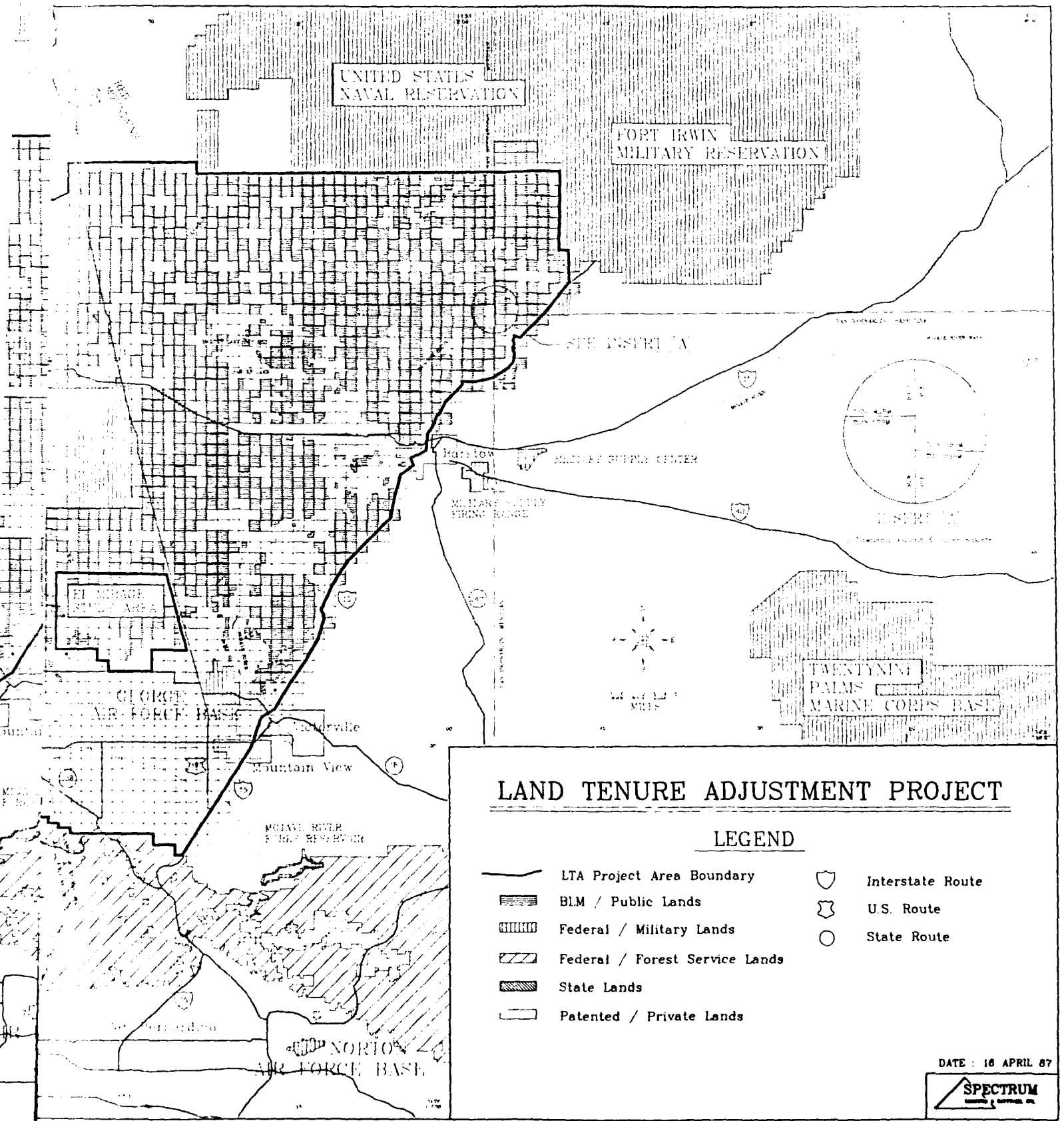
The pattern of landownership throughout the LTA Project Area, is checkerboard with public and private ownership and authority varying approximately every square other mile. The long term implications of this ownership pattern has given rise to concerns voiced by public and private agencies and individuals. The LTA project stems from the concerns of three of the agencies: the Air Force, the Bureau of Land Management, and the County of San Bernardino. The Air Force wishes to ensure that airspace corridors in the LTA Project Area remain usable in the future. The BLM desires to consolidate the current checkerboard landownership pattern in several areas containing sensitive resources. The County would like to be able to guide urban development in the region to avoid a random, scattered pattern of "leapfrog" development.

The Department of Defense (DoD) Air Force Flight Test Center (AFFTC) at Edwards Air Force Base and George Air Force Base in Victorville have three airspace corridors within the project area boundary. These



LTA1 REVISION 2

Figure 1.1 LTA Project Area



LAND TENURE ADJUSTMENT PROJECT

LEGEND

- LTA Project Area Boundary
- BLM / Public Lands
- Federal / Military Lands
- Federal / Forest Service Lands
- State Lands
- Patented / Private Lands
- Interstate Route
- U.S. Route
- State Route

DATE : 16 APRIL 87

SPECTRUM

Figure 1.2 General Mojave Desert Areas (Rowlands, et al. 1982)

corridors include: 1) ingress into George Air Force Base; 2) an expanded Precision Impact Range Area (PIRA) at Edwards Air Force Base; and 3) a supersonic/low level flight test area (see Fig. 1.3).

As a result of the checkerboard pattern of ownership, structural development could potentially occur on the private lands within the airspace corridors that would adversely impact the military uses of the airspace. The mission of the AFFTC is essential to the interests of national security. The testing of the manned and unmanned aerospace vehicles to meet an ever increasingly sophisticated threat requires that tests be conducted nearer to the surface and at higher speeds and often at night. In that these tests must be conducted in the airspace above and to the south of the Precision Impact Range on Edwards AFB and in the Low Level Supersonic corridor in the northeast portion of the LTA, the potential for conflict between DoD airspace usage and private use of the patented lands beneath the airspace is becoming extreme. The Air Force recognizes the requirement to protect the mission of the AFFTC and believes that the consolidation of public lands beneath the critical airspace corridors is in the best interest of both the public and private concerns.

For example, in 1981, a subdivision covering many alternate checkerboard sections of privately owned land was proposed to San Bernardino County. In responding, AFFTC stated that approval of the subdivision proposal would create a potential hazard to public health and safety and thus compromise its mission of flight testing manned and unmanned aerospace vehicles.

The checkerboard pattern is also a concern of the Bureau of Land Management. Several areas containing sensitive resources occur in the LTA Project Area. These areas include Black Mountain, Harper Dry Lake, and Rainbow Basin. The sensitive resources include fossils, petroglyphs, unique geological features, recreation areas, and wildlife habitat. The resources could be managed more effectively if all lands in these areas were under a single jurisdiction.

Also, the checkerboard pattern promotes "leapfrog" development, a land use incompatible with the San Bernardino County General Plan policies of creating a logical and orderly residential pattern, directing new urban development to areas where requisite urban services are available, and supporting those land uses which assure the essentially open, rural character of the desert. It is prohibitively expensive to provide county utilities and services to scattered leapfrog developments.

In October 1982, the BLM and the AFFTC, with concurrence from San Bernardino County, signed an Interagency Agreement to cooperate closely in the resolution of the checkerboard landownership problems. The BLM and AFFTC agreed to establish a land tenure adjustment project that would: 1) support the Department of Defense testing and training mission; 2) meet BLM resource management objectives; and 3) allow for the use and development of private lands in a manner consistent with the County General Plan.

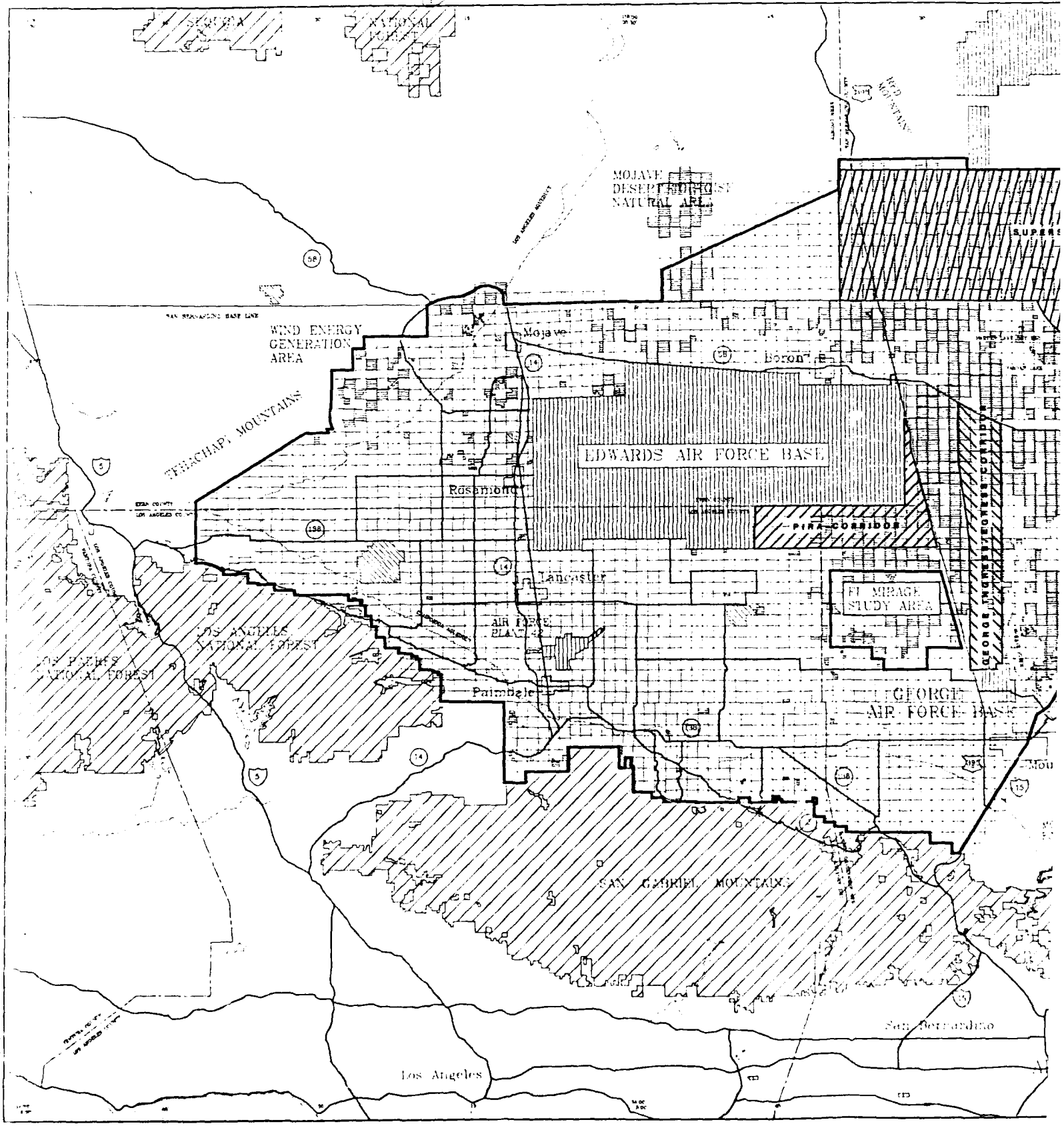
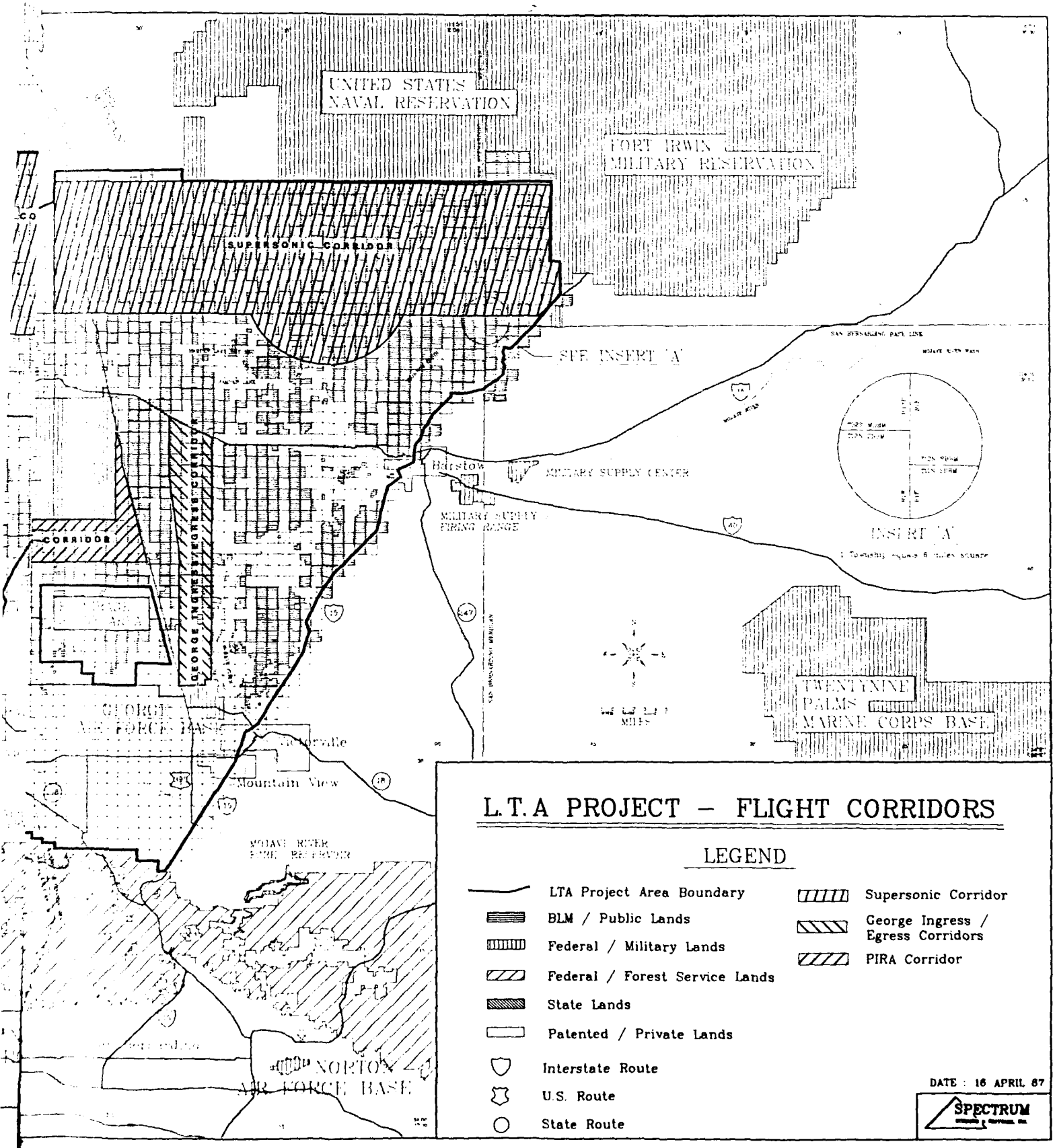


Figure 1.3 Current and Proposed Corridors


UNITED STATES
NAVAL RESERVATION
FORT IRWIN
MILITARY RESERVATION
SUPERSONIC CORRIDOR
SEE INSERT 'A'
GEORGE INGRESS/EGRESS CORRIDOR
CORRIDOR
Barstow
MILITARY SUPPLY CENTER
MILITARY SUPPLY
FIRING RANGE
INSERT 'A'
TWENTYNINE
PALMS
MARINE CORPS BASE
GEORGE
AIR FORCE BASE
Victorville
Mountain View
MOJAVE RIVER
FORK RESERVOIR
NORTON
AIR FORCE BASE
MILES
L.T.A PROJECT – FLIGHT CORRIDORS
LEGEND
LTA Project Area Boundary
BLM / Public Lands
Federal / Military Lands
Federal / Forest Service Lands
State Lands
Patented / Private Lands
Interstate Route
U.S. Route
State Route
Supersonic Corridor
George Ingress / Egress Corridors
PIRA Corridor
DATE : 16 APRIL 87
SPECTRUM

In order to formulate the LTA Project proposal, BLM and DoD, specifically Edwards and George Air Force Bases in cooperation with San Bernardino County, analyzed (both public and private) landownership patterns in the area under and surrounding the three military airspace corridors. As a result of this analysis, it was determined that land use management and ownership could be adjusted for lands within the vicinity of these airspace corridors to enhance BLM's management effectiveness, support DoD's mission, and allow for the use and development of private land. Land use management would be adjusted through changes in BLM multiple use classifications and changes in San Bernardino County land use categories for selected lands under the corridors. Adjustments in landownership would be accomplished through voluntary land exchanges between BLM and private landowners for those same lands (refer to Alternative VI in Chapter 2 for a specific description of the Proposed Action).

1.1.1 PRELIMINARY SCOPING PROCESS AND PREPLANNING ANALYSIS

The Council on Environmental Quality issued final regulations for implementing the National Environmental Policy Act (NEPA) in the Federal Register, Volume 43, Number 230, on November 29, 1978. In 1976, prior to passage of these final regulations, the United States Congress passed the Federal Land Policy and Management Act (FLPMA /43 USC 1737). This law directs the management of the public land in the United States. Included in FLPMA is a special section, Section 601, which was included to give direction for the management of the California Desert Conservation Area (CDCA). In Section 601, Congress required the preparation of a comprehensive plan for the CDCA. That plan completed in 1980 established guidance for management of the public land in the California Desert by the Bureau of Land Management. The entire LTA Project Area is within the boundaries of the CDCA, and is therefore subject to existing regulations for the CDCA. The LTA Project will require amendments to the California Desert Plan, the process for which is provided for in the Plan.

The California Desert Plan would be amended through this environmental impact statement/environmental impact report (EIS/EIR) and a subsequent Record of Decision. The amendment process requires a number of steps, including publication of a Notice of Intent and Notice of Availability of a Preplanning Analysis in the Federal Register, the preparation of an EIS, a 90-day public review, and the preparation of a Record of Decision (ROD) formally amending the Plan. This EIS/EIR is intended to accomplish the EIS and public review steps of that process. Should BLM decide to implement any alternative requiring changes in multiple use classes (that is, Alternatives II, III, IV, V, VI), a ROD would be issued documenting that decision and the rationale for it. Upon approval of the ROD, the Plan would be amended and the multiple use classes changed.

BLM, DoD and San Bernardino County completed the preplanning analysis for the Plan amendment in May 1986. A Notice of Intent to begin the environmental impact statement/Notice of Availability of planning criteria was published in the Federal Register June 6, 1986. From June 24 - June 27, 1986, public scoping meetings were held in four communities within the LTA Project Area. These public scoping meetings were preceded

by a mailing of the Land Tenure Adjustment Project Preplanning Analysis document published by the Bureau of Land Management, the Department of the Air Force and San Bernardino County. This process provided for a 30-day public review and comment period. Interested and involved State and Federal agencies as well as private organizations (e.g., recreation, mining and utilities) and private citizens were provided with pre-meeting copies of the planning document. In addition to mailing copies of the Preplanning Analysis, a media release was sent to local newspapers in the Barstow, Victorville, San Bernardino, and Lancaster areas to advise the public of the time and location of the meetings. Specific comments were requested from interested parties including landowners, utilities, mining interests, recreational users, conservation organizations, and other interested individuals or groups.

1.1.2 IDENTIFIED ISSUES

Four issues have been identified for the LTA Project. Issues identified at this time include:

1.1.2.1 Landownership Patterns

Landownership in the project area is a concern due to the checkerboard pattern (Plate - Map Pocket) where every other section is federal public land intermingled with private and state holdings. This pattern results in inefficient management of the public resources, due to the lack of consistency in authority for contiguous sections of land. Orderly private land development is equally difficult. Randomly placed access roads to isolated parcels of land leads to sporadic development. Access to private land must be obtained through public land. County utilities and services are often not available because of the high incremental cost of providing these utilities and services to dispersed private land holdings. This lack of consistency in authority results in inconsistency in land use management, which can lead to surface uses in conflict with each other and with DoD airspace uses.

Another problem stemming from this landownership pattern is the lack of control of spillover effects from adjacent land development and use. Unauthorized off-road vehicle (ORV) and other recreational uses encroach onto public or private land due to ill-defined boundaries. See Section 3.5 for a discussion of existing land uses and classifications.

1.1.2.2 Multiple Use Classifications

In the California Desert Plan, as amended, public land within the project area is designated under various multiple use classifications. These classifications are limited use, moderate use, intensive use, and unclassified. Classified areas will for the most part be retained or consolidated whereas the unclassified areas will be available for disposal (see Section 3.5.1 for definitions of these classifications). These classifications do not take into account the DoD activity of over-flying public land, which can result in conflicting land uses. Development proposals with structures whose height may equal the minimum altitude of flying aircraft is one example.

1.1.2.3 Land Use Categories

In the San Bernardino County General Plan, private land within the project area is designated under various land use categories. Again, these designations do not take into account the DoD activity of overflying private land, which can result in conflicting land uses. See Section 3.5.2 for definitions of these categories.

1.1.2.4 Public Health and Safety

No safety overlay has been developed by San Bernardino County to address the impacts to public health and safety from the overflying DoD activities in the project area. Annoyance, interference with speech communication and sleep, startle and startle reaction, structure height restrictions, etc., may occur under each of the airspace corridors. See Sections 3.5.3.

1.1.2.5 Resources of Concern

Physical Environment
- Air Resources
- Water Resources
  - Ground Water
  - Surface Water
- Earth Resources
  - Geology and Minerals
  - Paleontology
  - Soils

Biological Environment
- Wildlife Resources
  - Threatened and Endangered Species*
  - Sensitive Species*
- Plant Resources
  - Threatened and Endangered Species*
  - Sensitive Species*

Human Environment
- Archaeological/Cultural/Historic Resources
- Native American Values
- Recreation/Public Access*
- Visual and Aesthetic Resources
- Noise Factors
- Socioeconomic Factors

Land Uses and Patterns
- Range and Grazing Resources
- Agricultural Resources
- Mining/Mineral Access/Energy Development*
- Utility Corridors and Access*
- Military Test and Training Requirements*

*Comments received or concerns expressed during the public comment period.

Each of these issues will be addressed in the discussion of Affected Environment in Chapter 3 and Environmental Consequences in Chapter 4.

1.2 RELEVANT FEDERAL, STATE AND COUNTY REGULATIONS AND GUIDELINES

Numerous regulations and guidelines for BLM, DoD, the State of California, and San Bernardino County address general and specific aspects of the proposed action. Copies of these regulations and guidelines can be obtained from the respective agency offices. A discussion of each agency's requirements follows.

1.2.1 FEDERAL REGULATIONS AND GUIDELINES

Several federal laws are relevant to the action proposed in this Draft EIS/EIR. Among them are the Federal Land Policy and Management Act of 1976 the Wilderness Act of 1964 (16 USC 1131), the National Historic Preservation Act of 1966 as amended, the Indian Religious Freedom Act of 1978, the Archaeological Resource Protection Act of 1979, the Mining and Minerals Policy Act of 1970, National Minerals and Materials Policy, Research and Development Act of October 21, 1980 (30 USC 1601-1605), the Wild and Free-Roaming Horse and Burro Act of 1971, the Endangered Species Act of 1973 as amended, and the Public Rangeland Improvement Act of 1978.

Federal regulations such as the Interim Management Policy and Guidelines for Lands Under Wilderness Review (IMP-December12, 1979) provide management guidance for public lands. A decision was made by BLM to prepare an EIS as per 43 Code of Federal Regulations (CFR) 1610.5 and BLM Manual 1616. Preparation of EIS documents must conform to the Council on Environmental Quality (CEQ) guidelines (40 CFR 1503) and the National Environmental Policy Act of 1969 (NEPA). In addition to the above noted regulations, BLM actions are governed by the BLM Planning System Manual 1614 guidelines (public participation); 43 CFR 2200 for land exchanges; and specific sections of FLPMA (Sections 202, 206, 209).

1.2.2 STATE REGULATIONS AND GUIDELINES

State regulations provide management g[illegible] for private and state lands under the California Environm[illegible]ality Act (CEQA). Wildlife resources in the area are managed b[illegible]ifornia Department of Fish and Game. Other resources fall under [illegible]sdiction of various state agencies (e.g., recreation, mining, etc.). Cooperative agreements with federal agencies require that the Endangered Species Act of 1973 extend review responsibility to include State listed plants and animals. This document is being prepared as a joint EIS/EIR under the requirements of CEQA, 1986 Statute (Public Resources Code Section 21000 et seq.) as per 40 CFR 1506.2.

1.2.3 COUNTY REGULATIONS AND GUIDELINES

The San Bernardino County General Plan (June 1979, as amended) provides management guidance for private lands. All county zoning regulations are pertinent to this action, in particular Development Code,

Title 8 of the San Bernardino County Code. Within the LTA Project Area, all San Bernardino County zoning classifications exist.

The disposal of scattered public lands is consistent with the Kern and Los Angeles County General Plans. Disposal of said lands could result in more efficient management of identified open space and better control of urban expansion in eastern Kern and northern Los Angeles (Antelope Valley) counties.

1.3 ENVIRONMENTAL DOCUMENTATION LEVELS AND PHASING

This draft EIS/EIR and the subsequent final EIS/EIR are being prepared as the first "tier" in the environmental analysis process required by NEPA and CEQA for changes in current land management practices and procedures within the LTA Project Area. This tier approach is consistent with Section 1502.20 of NEPA and Section 21068.5 of CEQA. It is important to recognize that this EIS/EIR assesses aggregate impacts under existing, proposed, and alternative land use plans for the LTA Project Area. Completion of this EIS/EIR, and resultant acceptance of the proposed action or an alternative (a change in land use plans), provides a framework for implementation. Completion of the first tier environmental analysis and planning decisions does not result in actual land consolidation and disposal.

The processing of specific land exchanges constitutes plan implementation. Under current regulation (43 CFR 2200), site specific environmental analyses are prepared for each proposed exchange. These exchange specific analyses are the second "tier" in the environmental process. The required evaluations include: mineral potential, sensitive, rare, threatened and endangered species; archaeological resources; range and grazing resources; and other laws, regulations and guidelines. These evaluations will be conducted as described below.

Minerals

As per BLM Manual 3060.1, a mineral potential report and surface interference determination is required for exchanges under Section 206 FLPMA exchanges. A dollar value is placed on the mineral estate through an appraisal when the land is determined to have "value" in the mineral report. A mineral and/or surface exchange may proceed under Section 206 only if determined to be in the public interest, and the aggregate value of the offered and selected land, or payment in lieu of such value is within 25 per centum of the value of either parcel and interests therein. Surface exchanges may be made subject to the rights of mining claims encumbering the selected parcels.

Surface exchanges made subject to mining claims must recognize that the mining claimant has a superior right to use so much of the surface for occupation and operations reasonably incident to prospecting, mining and processing, including the right to purchase the surface and mineral estate under the authority of the General Mining Law of 1872. The surface exchange proponent may challenge the validity of any mining claim located on the exchanged surface through the private contest procedures in the regulations at 43 CFR part 4.

Within 30 days from completion of an exchange made pursuant to Section 206 of the FLPMA, and the United States acquires the mineral estate, an order will be published in the Federal Register pursuant to the regulations at 43 CFR 2200.3 opening the area to the operation of the mining and mineral leasing laws.

Wildlife and Plants

Officially designated federal threatened or endangered species are protected, as amended under the Endangered Species Act of 1973 as amended. These are listed by the United States Fish and Wildlife Service (FWS). A list of candidate species, species currently under review for possible addition to the list of endangered or threatened species, is also maintained by the FWS. Although not protected by the FWS as are the listed plants and animals, candidate species are taken into account in environmental planning activities on federal lands (e.g., with environmental impact analysis under the National Environmental Policy Act of 1969).

BLM policy is to use its authority in furtherance of the purposes of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C 1531 et seq.), to conserve federally listed rare, threatened, and candidate plants and animals.

Through its actions or decisions (e.g., land exchanges), the BLM will not jeopardize the continued existence of any federally listed threatened or endangered plant or animal, nor will it destroy or adversely modify Critical Habitats as determined by the Fish and Wildlife Service of any such species.

The California Native Plant Protection Act of 1977 (Fish and Game Code, Division 2, Chapter 10) protects rare and endangered plant species which are listed by the California Department of Fish and Game. The California Endangered Species Act (Fish and Game Code, Division 3, Chapter 1.5 amended in 1984) provides for the protection of and creates categories of rare, endangered, threatened and candidate species. It is BLM policy to use its authority under state law to conserve state-listed plants and animals.

Cultural

Mitigation of potentially adverse effects to archaeological and historic resource properties will be undertaken for all tracts of land which will be transferred from public to private management. Mitigative procedures will follow the guidelines and requirements outlined for land transfers in the Programmatic Memorandum of Agreement between the BLM-California, California State Historic Preservation Office, and the Advisory Council on Historic Preservation ratified May 16, 1986. In the case of land transfers, this document requires the following procedures:

1) BLM shall review the existing data base to determine if there are known historic properties or if the area is likely to include historic properties.

2) BLM shall discourage selection of lands that include known properties or that are considered sensitive, unless it is determined that transfer of such lands is in the best public interest.

3) If the land transfer proceeds, BLM shall determine whether or not it is necessary to undertake identification efforts. Normally, such identification would include Class III field inventory of the tract to locate, identify, record, and evaluate all archaeological and historical resources properties.

4) If it is determined that significant cultural resource properties are located on the transfer lands, BLM shall undertake appropriate treatment measures to either preserve the property or to recover the scientific data prior to transfer.

In addition to adherence to the above requirements, the cultural resource mitigation program will include preparation at the outset of a technical study plan in which procedures and standards for identification and treatment are detailed for the project as a whole. The study plan will also include a review of existing literature and will place the proposed work within a research context designed to fill in current data gaps in the cultural resource setting for the LTA Project Area.

Mitigation of potential loss of paleontological resource data as a result of landownership or multiple/land use categories would be addressed under the requirements of existing regulations and management guidelines. Existing information on known paleontological resources for a given tract of land considered for transfer will be reviewed to identify the presence of known resource localities as well as the potential occurrence, given the distribution of known fossiliferrous formations. Field studies will be required to evaluate known resources and may be required to verify the presence or absence of suspected resources. Actual mitigation of the loss of significant paleontological data identified through this process may include field mapping and documentation, as well as collection and curation. Future protective guidelines may be required, depending upon transfer status and redesignation of land use categories.

If significant Native American issues are identified during further environmental analyses for the LTA Project, mitigation measures will be undertaken in accordance with applicable federal and state regulations and existing management guidelines. Mitigative efforts would include identifying, evaluating, and protecting areas or items of Native American concern, such as those related to religious interests or traditional uses.

Range

According to 43 CFR 4100 when public lands are disposed of (e.g., land exchange), the grazing permittees and lessees are given two years prior notification before their grazing permit or grazing lease and

grazing preference may be canceled. A permittee or lessee may unconditionally waive the two-year prior notification. Such a waiver does not prejudice the permittee's or lessee's right to reasonable compensation for, but not to exceed the fair market value of his or her interest in authorized permanent range improvements located on these public lands.

Whenever a grazing permit or lease is canceled in order to devote the public lands covered by the permit or lease to another public purpose, including disposal, the permittee or lessee receives from the United States reasonable compensation for the adjusted value of their interest. This includes authorized permanent improvements placed or constructed by the permittee or lessee on the public lands covered by the canceled permit or lease. The adjusted value is to be determined by the authorized officer (in this case, BLM). Compensation shall not exceed the fair market value of the terminated portion of the permittee's or lessee's interest therein. Where a range improvement is authorized by a range improvement permit, the livestock operator may elect to salvage materials and perform rehabilitation measures rather than be compensated for the adjusted value.

Permittees or lessees are allowed 180 days from the date of cancellation of a range improvement permit or cooperative agreement to salvage material owned by them and perform rehabilitation measures necessitated by the removal.

When lands outside designated allotments become available for livestock grazing under the administration of the Bureau of Land Management, the livestock forage available may be allocated to qualified applicants at the discretion of the authorized officer.

In summary, the LTA draft and final EIS/EIR (first tier analysis) pertain to proposed and alternative land use planning scenarios. The final plan will identify, on an area wide basis, zones suitable for consolidation (acquisition of private lands), retention of existing landownership patterns, and disposal of public lands. Decisions to acquire and dispose of specific parcels of land will only be made following second tier environmental analyses of individual land exchange proposals.

2. ALTERNATIVES CONSIDERED INCLUDING THE PROPOSED ACTION

2.0 INTRODUCTION

Information presented in this chapter provides a general descriptive statement of the action proposed by BLM, DoD, and San Bernardino County, and a range of reasonable alternatives. Information includes background on how alternatives were formulated, the alternatives that were formulated and a discussion and comparison of the alternatives.

Major issues and concerns identified through the alternative formulation process, the scoping process, management concerns of affected state and federal agencies, pertinent legal and regulatory requirements, and other relevant public comments have been used in formulating the alternatives for this draft EIS/EIR. Those alternatives which are considered in detail represent a reasonable range of opportunities that address significant issues and concerns in the LTA project review process.

2.1 FORMULATION OF ALTERNATIVES

Development of alternatives was based on BLM and DoD separately prioritizing locations within the LTA Project Area. These locations, in each agency's opinion, were important in the effective management of existing resources. BLM priority locations included Areas of Critical Environmental Concern (ACECs), a Wilderness Study Area (WSA), cultural resource land, recreational use land, and desert tortoise habitat. DoD priority locations included the ingress corridor into George Air Force Base, expanded Precision Impact Range Area (PIRA), and a supersonic/low-level flight corridor. These priority locations were compared and combined through the collaborative effort of BLM and AFFTC. Like the proposed action (the preferred alternative), four alternatives were developed based on resource values and existing uses which would accomplish essentially the same objectives as the proposed action. A fifth alternative, the "No Action" alternative (continuation of present management), required by 40 CFR 1502.14, is also addressed.

2.2 DEFINITION OF ZONES

Three zones have been identified to address the landownership pattern and authority/jurisdiction concerns within the LTA Project Area. Under each alternative, areas have been identified as suitable for **consolidation** of public land, **retention** of existing ownership, or **disposal** of public land.

2.2.1 CONSOLIDATION ZONES

Land within this zone is identified as possessing BLM resources (e.g., cultural resources, Areas of Critical Environmental Concern, Wilderness Study Area) and priority DoD values (e.g., supersonic test area, portions of the PIRA, and ingress to George Air Force Base). Consolidation of land into public ownership is considered to be an effective means to achieve efficient and more compatible land and air-space management.

2.2.2 RETENTION ZONES

Due to BLM resources (e.g., recreation and minerals) and lower DoD priority values, ownership of land within this zone would remain the same; that is, private land stays private and public land stays public.

2.2.3 PUBLIC LAND DISPOSAL ZONES

Public land within this zone is identified as possessing minimal or comparatively lower DoD values and creates an exchange base for private land acquired in the consolidation zones. Ownership would change from public to private.

2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED

2.3.1 CONSOLIDATION OF BLM HIGH PRIORITY AREAS ONLY

Only those private lands within or immediately adjacent to BLM high priority areas would be acquired by the federal government. These areas would include six ACECs (Black Mountain, Eriophyllum, Harper Dry Lake, Kramer Hills, Rainbow Basin, Helendale Scelerocactus) and the Black Mountain WSA. No other private lands would be acquired.

This alternative was eliminated because land considered by DoD as necessary to meet the project objective of supporting the DoD testing and training mission would not be acquired.

2.4 ALTERNATIVES CONSIDERED IN DETAIL

Six alternatives, including a "No Action" alternative (Alternative I) and the Proposed Action alternative (Preferred Alternative - Alternative VI) are discussed below. Table 2.1 presents data for each alternative. Acreages noted in Table 2.1 and in the text are approximate. (Note: Multiple Use Classifications apply to public lands only. Land Use Categories, Safety and Noise Overlay Designation applies to private lands in San Bernardino County only). Alternative I (No Action) would result in the continuation of the present management practices of BLM, DoD, and San Bernardino County within the LTA Project Area. Alternative VI is the alternative proposed by BLM and DoD with concurrence of San Bernardino County to best achieve the management objectives for land within the project area.

2.4.1 ALTERNATIVE I (NO ACTION; see Fig. 2.1)

Alternative I is a continuation of current management practices for public land administered by BLM and private land regulated by San Bernardino County.

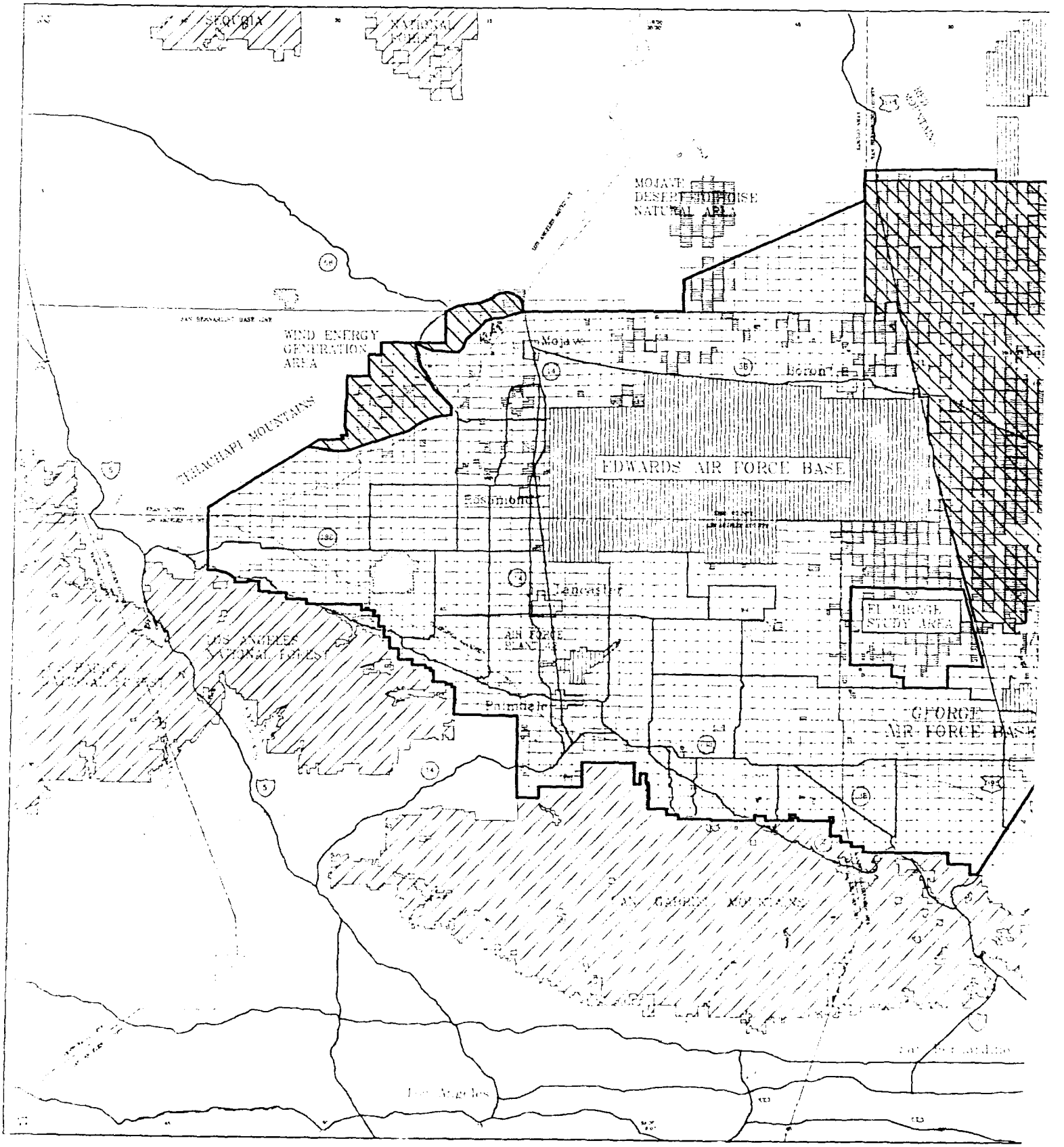
2.4.1.1 Landownership Pattern

Under the No Action alternative, no changes in landownership would occur.

TABLE 2.1 SUMMARY OF ALTERNATIVES AND LAND MANAGEMENT/OWNERSHIP STATUS

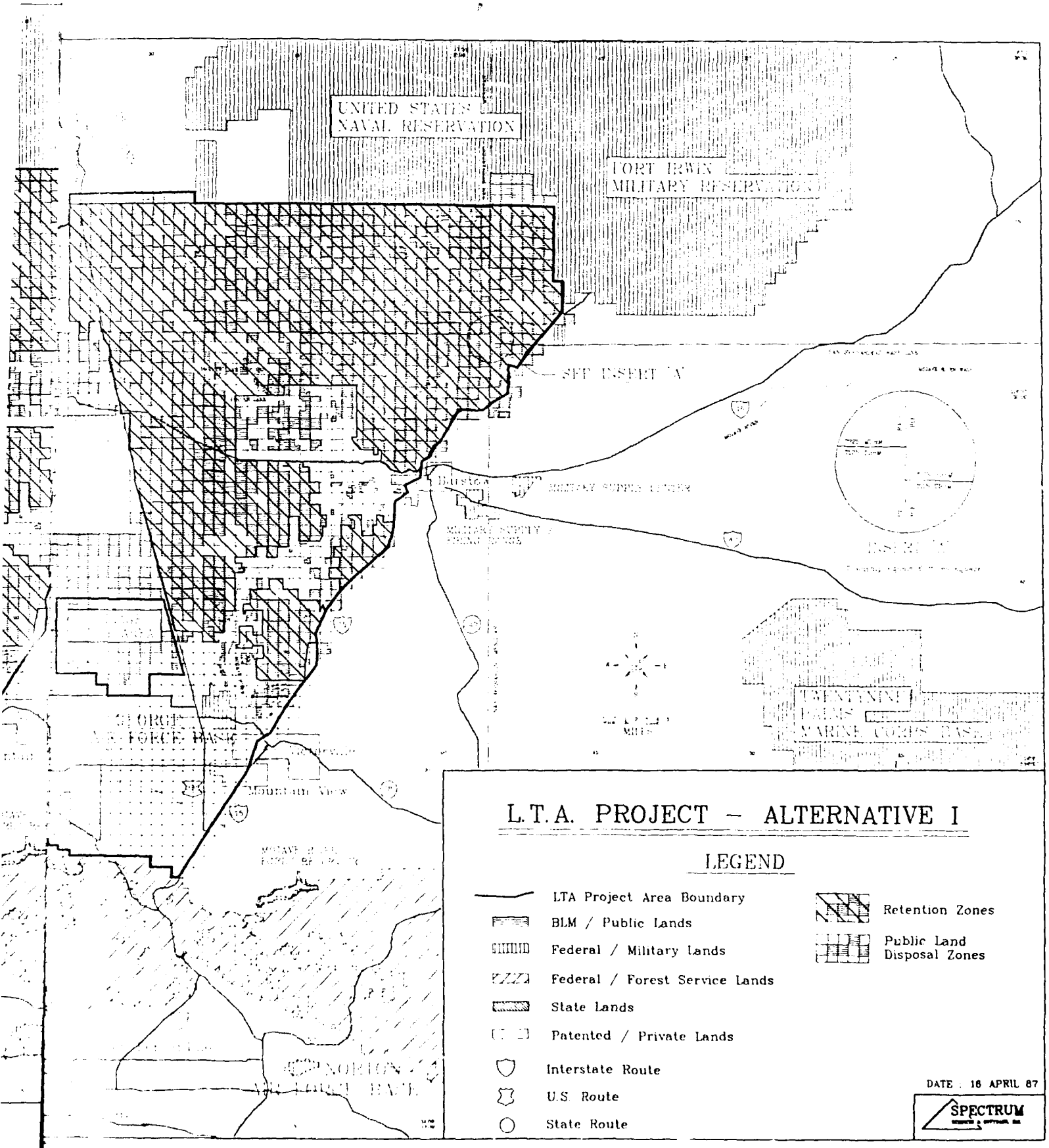
Alternatives	Landownership Pattern: Consolidation Zones Private/Public (1000 Acres)	Landownership Pattern: Retention Zones Private/Public (1000 Acres)	Landownership Pattern: Disposal Zones Public (1000 Acres)	Multiple Use Classifications Public Land (ACRES)	County Land Use Categories/ Public Health and Safety Private Land
I No Action	-	-	-	L = 185,920 ACRES M = 191,040 ACRES U = 142,880 ACRES	Existing for all Categories
II	79,379/ 70,304	379,322/ 369,632	81,644	Existing for Consolidation (L = 184,800), Retention Zones (M = 191,040) Unclassified (142,880) for Disposal Zones	RL[1]/SNOD[2] for Consolidation Zones Existing for Retention and Disposal Zones
III	142,674/ 130,752	229,568/ 252,096	138,752	Class L (130,752) for Consolidation Zone and Class M (252,096) for Retention Zone[3], Unclassified (138,752) for Disposal Zone	RL/SNOD for Consolidation Zones Existing for Retention and Disposal Zones
IV	250,231/ 187,448	105,879/ 146,912	187,20[illegible]	Class L (251,776) for Consolidation Zone[3], Existing (74,464) for Retention Zone - except Unclassified - then Class L, Unclassified (195,361) for Disposal Zone	RC[4]/SNOD for Consolidation Zones RL/SNOD for Retention Zones Existing for Disposal Zones
V	333,687/ 353,587	205,522/ 101,280	66,733	Class L (454,867) for Consolidation, Class L for Retention Zones, Unclassified (66,733) for Disposal Zone	RC/SNOD for Consolidation and Retention Zones Existing for Disposal Zones
VI Proposed Action	250,305/ 264,288	192,614/ 124,544	132,768	Class L (291,520) for Consolidation Zone, Existing for Retention (M = 76,064) Zone Unclassified (154,016) for Disposal Zone	RC/SNOD for Consolidation Zones RL/SNOD for Retention Zones Existing for Disposal Zones

[1]Rural Living
[2]Safety-Noise Overlay Designation
[3]Only for presently Unclassified Lands; if Classified then No Change from Existing
[4]Rural Conservation



LTA REVISION 2

Figure 2.1 LTA Project Area, Alternative I (No Action)


UNITED STATES
NAVAL RESERVATION
FORT IRWIN
MILITARY RESERVATION
SEE INSET 'A'
GEORGE
AIR FORCE BASE
TWENTYNINE
PALMS
MARINE CORPS BASE
NORTON
AIR FORCE BASE
L.T.A. PROJECT – ALTERNATIVE I
LEGEND
LTA Project Area Boundary
BLM / Public Lands
Federal / Military Lands
Federal / Forest Service Lands
State Lands
Patented / Private Lands
Interstate Route
U.S. Route
State Route
Retention Zones
Public Land
Disposal Zones
DATE : 16 APRIL 87
SPECTRUM

2.4.1.2 Multiple Use Classifications

No multiple use classifications would change if the No Action alternative is selected.

2.4.1.3 Land Use Categories

Land use categories would remain as they presently exist under the No Action alternative.

2.4.1.4 Public Health and Safety

No changes would occur with respect to public health and safety if the No Action alternative is selected because there are currently no overlays.

2.4.2 ALTERNATIVE II (see Fig. 2.2)

2.4.2.1 Landownership Pattern

Alternative II would result in a minimal acreage (79,379 acres) of private land becoming public land in the consolidation zone. Included in the consolidation zone would be the highest priority land identified by BLM (Areas of Critical Environmental Concern, Wilderness Study Area) and DoD (turning zone for the supersonic/low level flight corridor and the area nearest the runway at George AFB) for management of existing resources. Maximum acreage would remain in the retention zone (369,632 acres) and 81,664 acres of public land would be available for disposal through exchanges.

2.4.2.2 Multiple Use Classifications

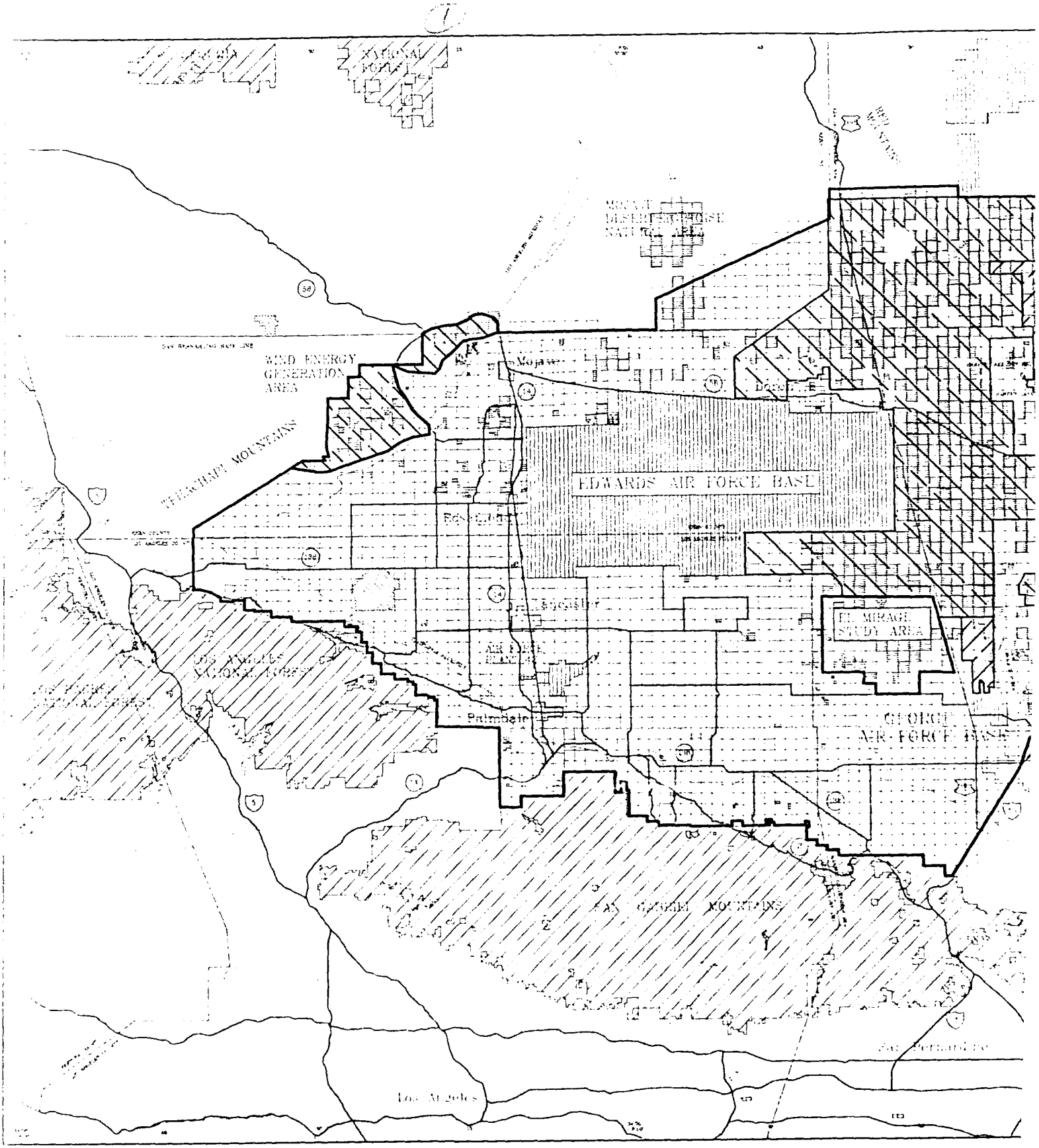
Existing multiple use classifications would remain for the consolidation (184,800 acres) and retention zones (191,040 acres). Land identified for disposal (142,880 acres) would be designated unclassified (see Section 3.5.1 for definitions of land classifications).

2.4.2.3 Land Use Categories

Private land within the consolidation zones would be considered for a Rural Living (RL) designation to avoid future conflicts with DoD airspace activities. Existing land use categories would remain for land within retention and disposal zones (see Section 3.5.2 for definitions of land use categories).

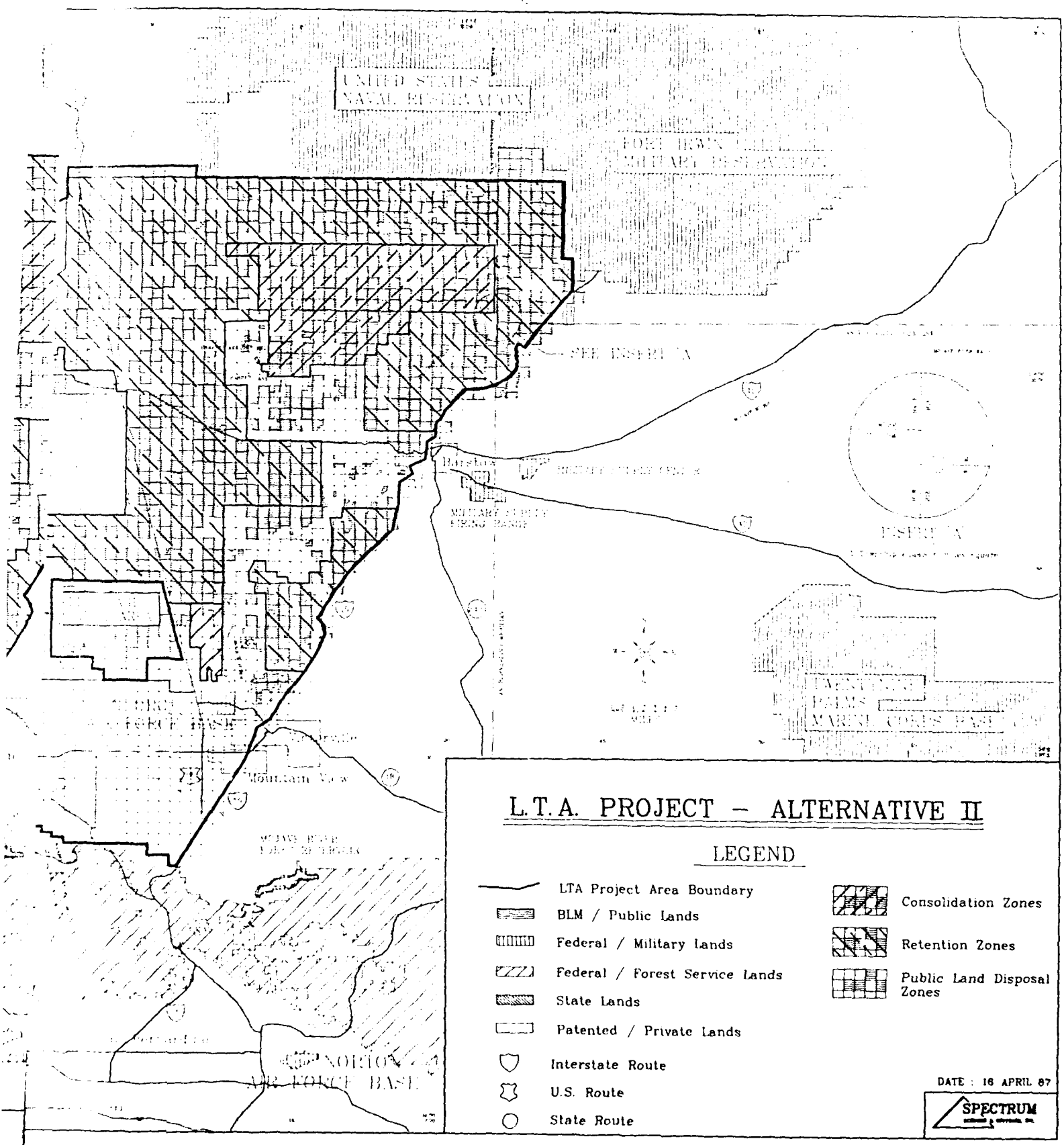
2.4.2.4 Public Health and Safety

A Safety-Noise Overlay designation would be considered for the consolidation zone. Other existing classifications would remain as is.



LTA REVISION 2

Figure 2.2 LTA Project Area, Alternative II


L.T.A. PROJECT – ALTERNATIVE II
LEGEND
LTA Project Area Boundary
BLM / Public Lands
Federal / Military Lands
Federal / Forest Service Lands
State Lands
Patented / Private Lands
Interstate Route
U.S. Route
State Route
Consolidation Zones
Retention Zones
Public Land Disposal Zones
DATE : 16 APRIL 87
SPECTRUM

2.4.3 ALTERNATIVE III (see Fig. 2.3)

2.4.3.1 Landownership Pattern

A total of 142,674 acres of private land identified as priority BLM resources (ACECs, WSA, Black Mountain/Opal Mountain Management Area) and Priority DoD values (entire stretch of the supersonic/low level flight corridor and ingress corridor into George AFB) are included for management consideration in consolidation zones for this alternative. A total of 252,096 acres of public land is included in the retention zones. Public land available for disposal would include a total of 138,752 acres.

2.4.3.2 Multiple Use Classification

Public land in consolidation zones would be designated Class L (130,752 acres) to protect resources and minimize future conflicts with DoD activities through better control of discretionary actions. Existing multiple use classification would remain for land in the retention zones (252,096 acres) unless it is presently unclassified (138,752 acres). This presently unclassified land would then be classified as Class M. All land in the disposal zones (138,752 acres) would be designated as unclassified (see Section 3.5.1 for definitions of land classifications).

2.4.3.3 Land Use Categories

Private land in consolidation zones (142,674 acres) would be considered for a Rural Living (RL) designation to avoid future conflicts with DoD activities. Existing county designations would be continued for private land in the retention (229,568 acres) and disposal (138,752 acres) zones (see Section 3.5.2 for definitions of land use categories).

2.4.3.4 Public Health and Safety

A Safety-Noise Overlay would be considered for private land in the consolidation zones to avoid future conflicts with DoD activities.

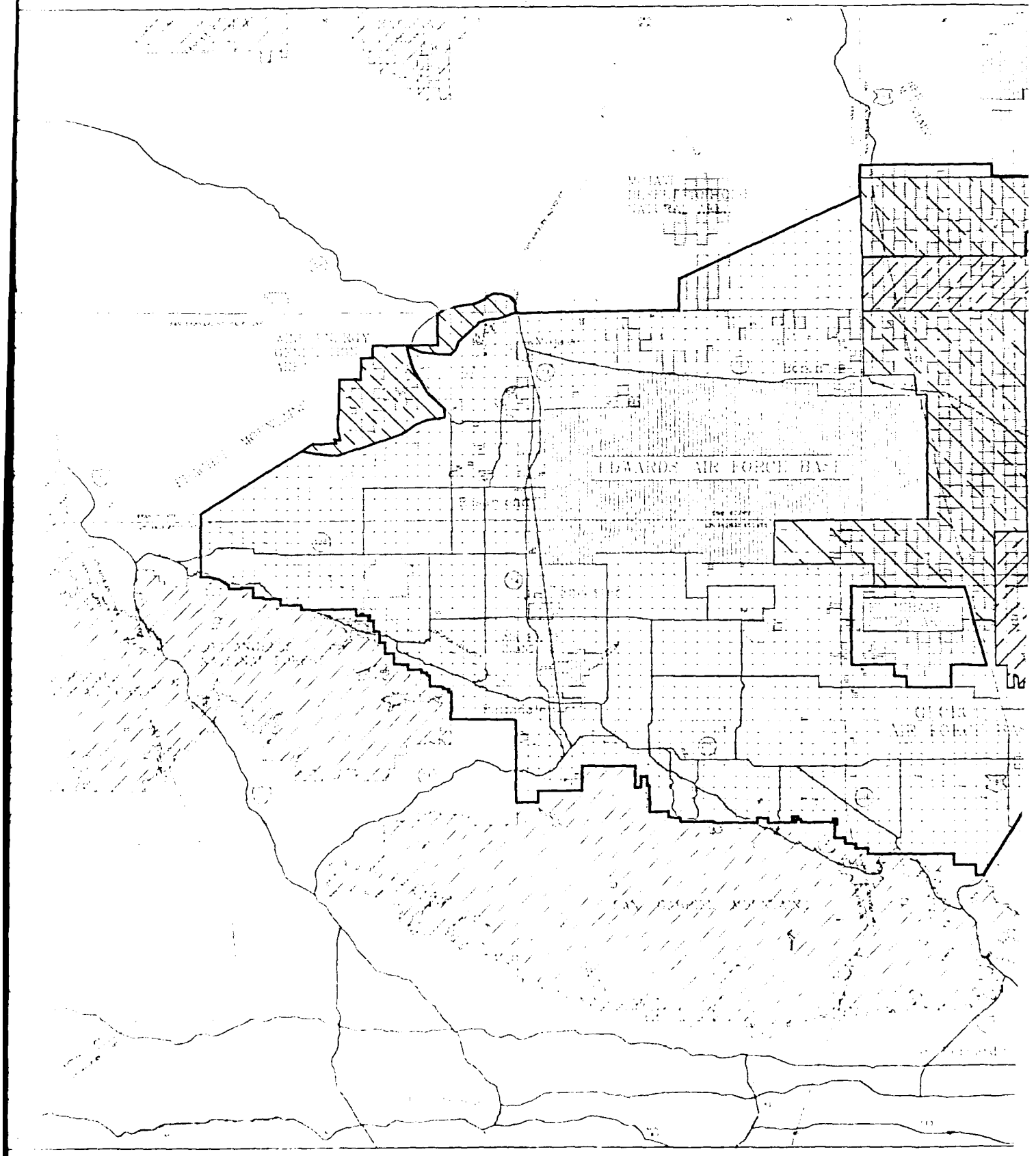
2.4.4 ALTERNATIVE IV (see Fig. 2.4)

2.4.4.1 Landownership Pattern

Acreage in each zone would be equalized as nearly as possible under this alternative. This alternative allows for possible disposal of some BLM resource values (recreation, wildlife habitat) as a trade-off for consolidation of DoD priority areas (portions of all three corridors). A total of 250,231 acres of private land exists in the consolidation zones. The retention zone and disposal zone acreages are 146,912 and 187,200 acres, respectively.

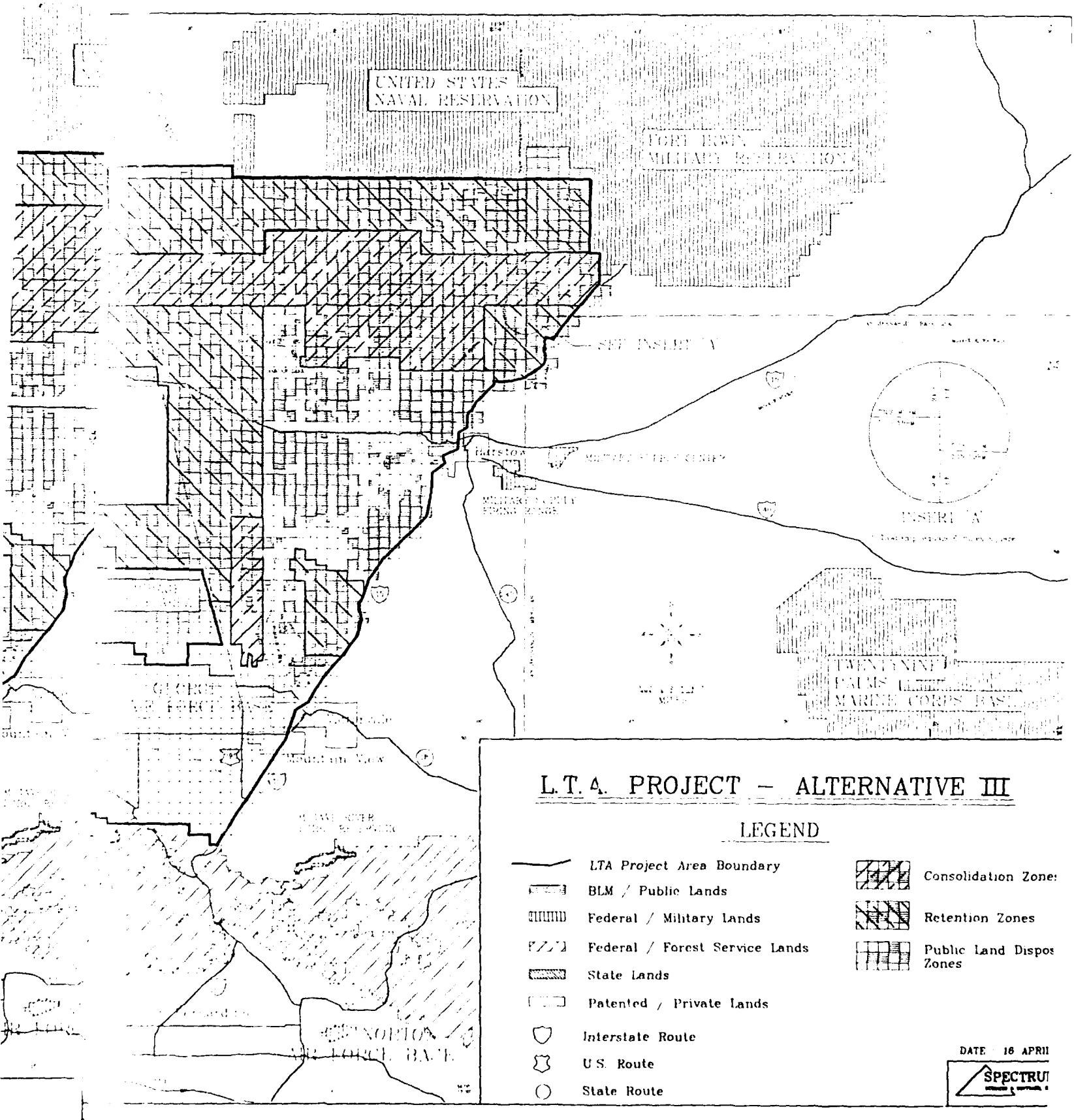
2.4.4.2 Multiple Use Classifications

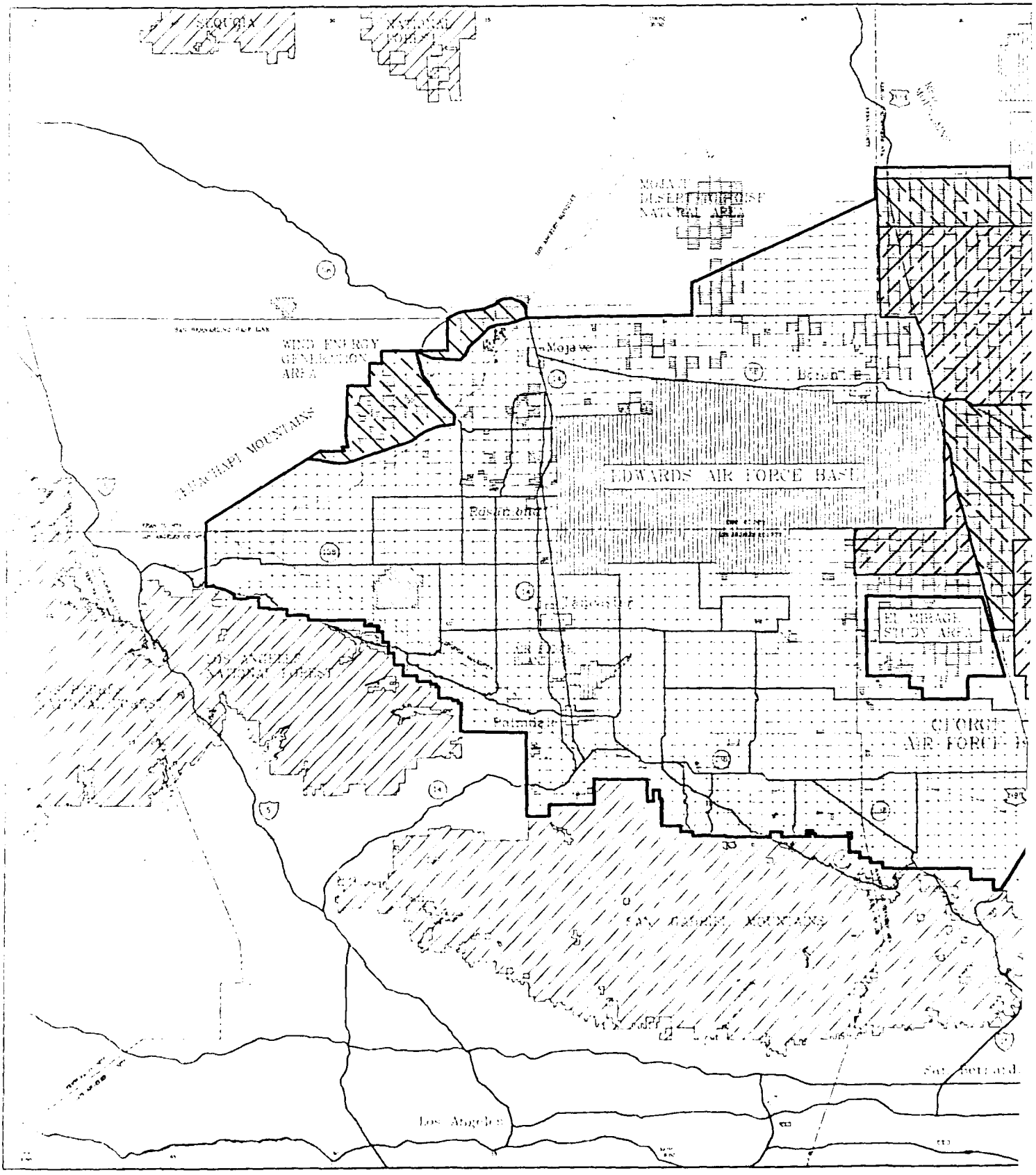
Land in the consolidation zones (251,776 acres) would be Class L to minimize future conflicts with DoD activities (see Section 3.5.1 for definitions of land classifications). Existing classifications would be



LTA REVISION 2

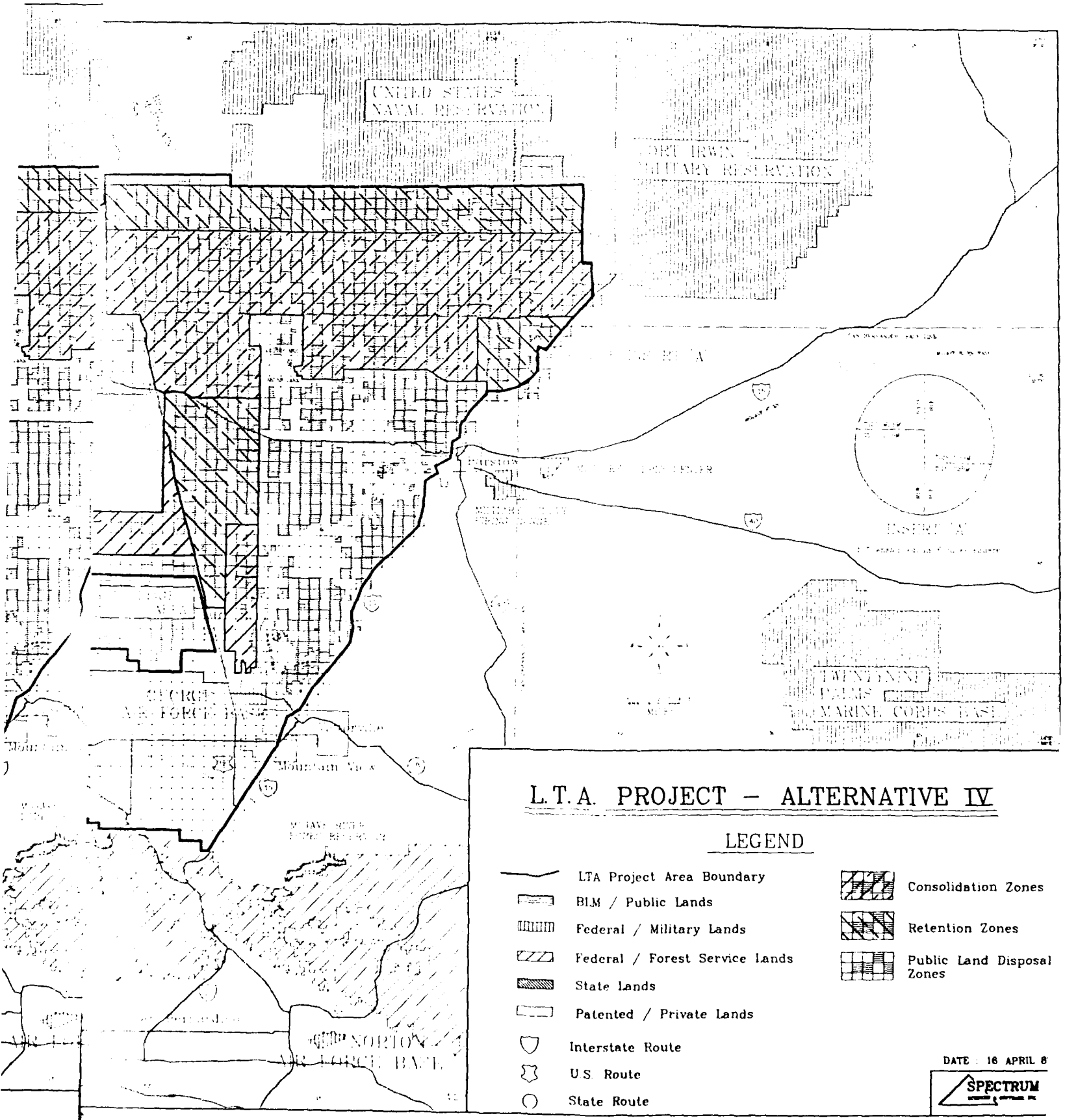
Figure 2.3 LTA Project Area, Alternative III


UNITED STATES
NAVAL RESERVATION
FORT IRWIN
MILITARY RESERVATION
L.T.A. PROJECT – ALTERNATIVE III
LEGEND
LTA Project Area Boundary
BLM / Public Lands
Federal / Military Lands
Federal / Forest Service Lands
State Lands
Patented / Private Lands
Interstate Route
U.S. Route
State Route
Consolidation Zones
Retention Zones
Public Land Disposal Zones
DATE 16 APRIL
SPECTRUM



LTA REVISION 2

Figure 2.4 LTA Project Area, Alternative IV


UNITED STATES
NAVAL RESERVATION
FORT IRWIN
MILITARY RESERVATION
GEORGE
AIR FORCE BASE
MARCH
AIR FORCE BASE
NORTON
AIR FORCE BASE
TWENTYNINE
PALMS
MARINE CORPS BASE
L.T.A. PROJECT – ALTERNATIVE IV
LEGEND
LTA Project Area Boundary
BLM / Public Lands
Federal / Military Lands
Federal / Forest Service Lands
State Lands
Patented / Private Lands
Interstate Route
U.S. Route
State Route
Consolidation Zones
Retention Zones
Public Land Disposal Zones
DATE : 16 APRIL 8
SPECTRUM

continued in the retention zones (74,464 acres) except where currently unclassified (195,361 acres). These lands would be designated Class L for better control of discretionary actions. Land in the disposal zone (195,361 acres) would be designated as unclassified.

2.4.4.3 Land Use Categories

Private land in the consolidation zones (250,231 acres) would be considered for a Rural Conservation (RCN) designation to prevent future conflicts with DoD activities. A Rural Living (RL) designation also would be considered for the retention zones (105,879 acres) to avoid future conflicts with DoD activities. All disposal zone lands (187,200 acres) would continue with existing designations (see Section 3.5.2 for definitions of land use categories).

2.4.4.4 Public Health and Safety

A Safety-Noise Overlay would be considered for the consolidation and retention zones.

2.4.5 ALTERNATIVE V (see Fig. 2.5)

2.4.5.1 Landownership Pattern

Land with important BLM resources (ACECs, WSA, cultural resources, tortoise habitat) and DoD values (all three corridors) would be consolidated to the maximum extent possible under this alternative (333,687 acres). Amount of public land in the retention zones (101,280 acres) and disposal zones (66,733 acres) would be minimized.

2.4.5.2 Multiple Use Classifications

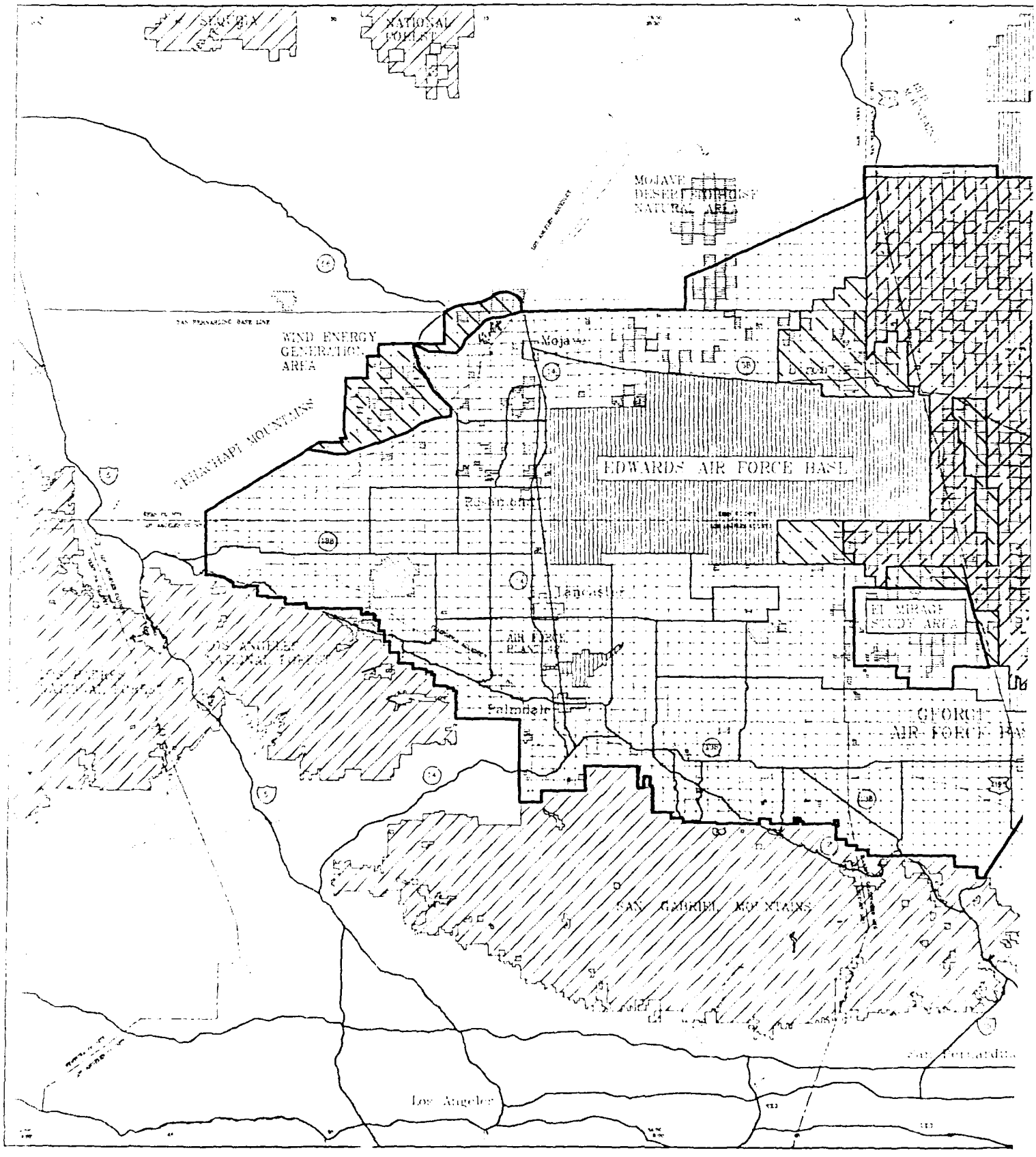
Land in both the consolidation and retention zones would be designated as Class L (454,867 acres) to minimize future conflicts with DoD activities (see Section 3.5.1 for definitions of land classifications). Disposal lands (66,733 acres) would be designated unclassified.

2.4.5.3 Land Use Categories

Private land in the consolidation (333,687 acres) and retention zones (205,522 acres) would be considered for designation as Rural Conservation (RCN) to prevent future conflicts with DoD activities. Existing classification would continue for disposal zone (66,733 acres) land (see Section 3.5.2 for definitions of land use categories).

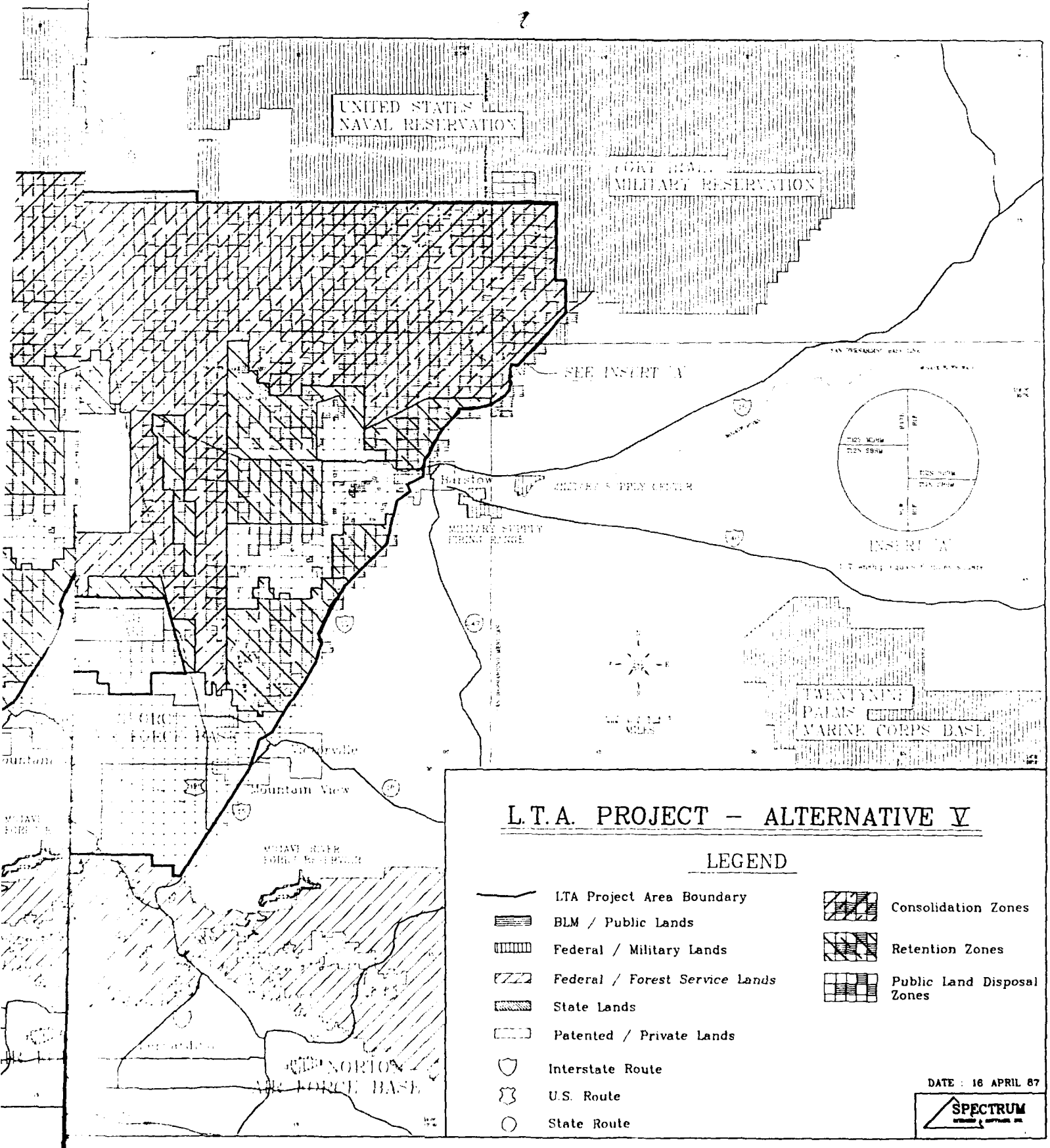
2.4.5.4 Public Health and Safety

A Safety-Noise Overlay would be considered for land in the consolidation and retention zones to prevent future conflicts with DoD activities.



LTA REVISION 2

Figure 2.5 LTA Project Area, Alternative V


UNITED STATES
NAVAL RESERVATION
MILITARY RESERVATION
SEE INSERT "A"
Barstow
INSERT "A"
TWENTYNINE
PALMS
MARINE CORPS BASE
Mountain View
NORTON
AIR FORCE BASE
L.T.A. PROJECT – ALTERNATIVE V
LEGEND
LTA Project Area Boundary
BLM / Public Lands
Federal / Military Lands
Federal / Forest Service Lands
State Lands
Patented / Private Lands
Interstate Route
U.S. Route
State Route
Consolidation Zones
Retention Zones
Public Land Disposal Zones
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2.4.6 ALTERNATIVE VI - PROPOSED ACTION (see Fig. 2.6)

Alternative VI is the BLM and DoD Preferred Alternative. Alternative VI includes a level of benefit to all three agencies. Impacts to resource values for Alternative VI include losses of desert tortoise habitat, loss of habitat for Mohave ground squirrel and Mohave vole, loss of portions of grazing allotments, reduced protection for some cultural and/or paleontological resources, and a beneficial socioeconomic impact in Barstow and Victorville. Alternative VI would benefit each agency by promoting management of contiguous areas and the resources or resource values of concern.

2.4.6.1 Landownership Pattern

This alternative provides for maximizing private land acreage identified for acquisition through exchange in the LTA Project Area (250,305 acres). This land has been identified as priority by BLM and DoD for resource management. A total of 124,544 acres of public land is included in the retention zone under this alternative. A maximum acreage (132,768 acres) would be included in the disposal zone.

2.4.6.2 Multiple Use Classifications

Public land in the consolidation zone (291,520 acres) would be designated Class L to minimize future conflicts with DoD activities (see Section 3.5.1 for definitions of land classifications). Public land in the retention zone (76,064 acres) would remain under existing classifications. Land in the disposal zone (154,016 acres) would be designated as unclassified.

2.4.6.3 Land Use Categories

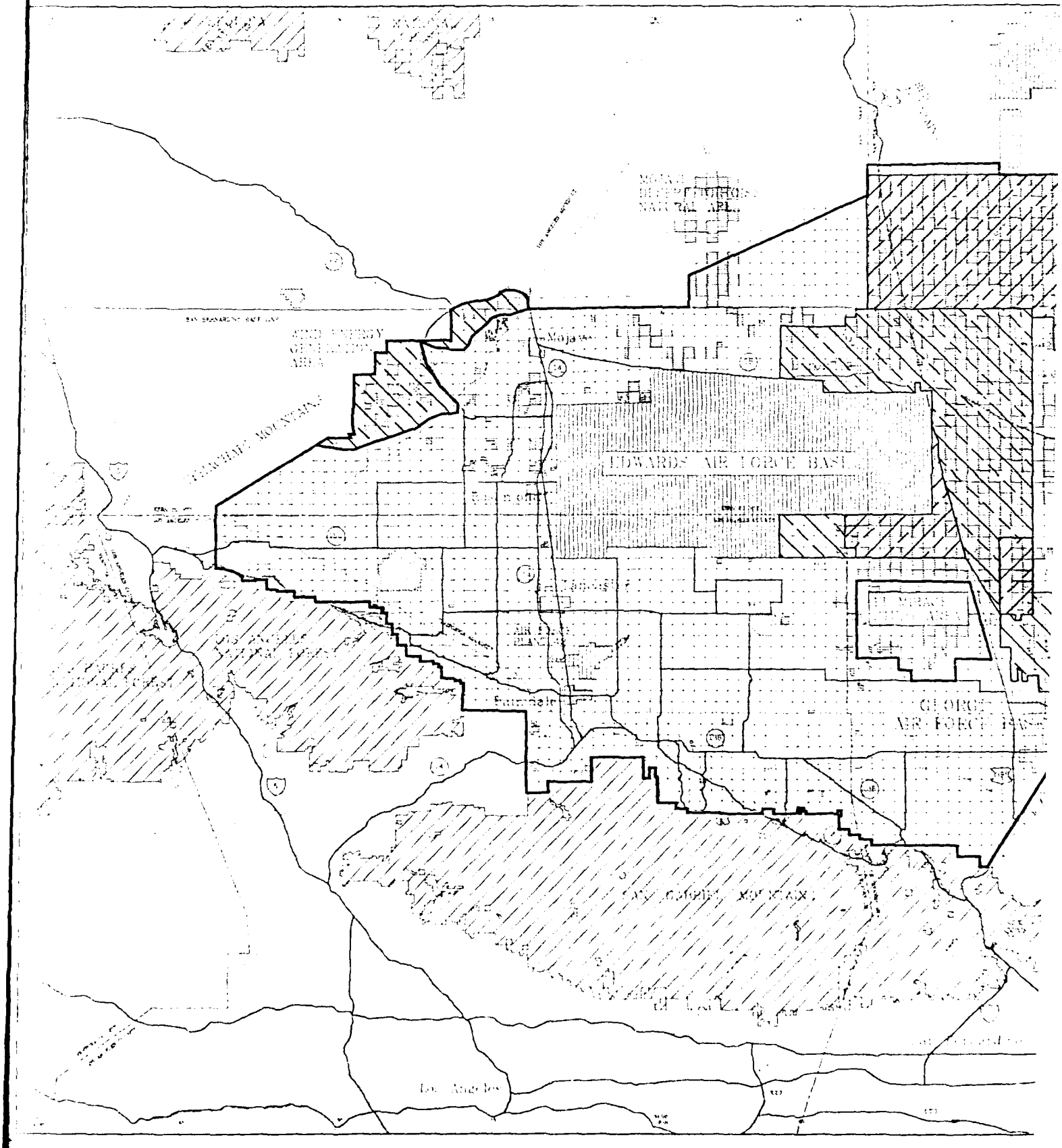
Private land in the consolidation zone (250,305 acres) would be considered for a Rural Conservation designation to avoid future conflicts with DoD activities. Retention zone land (192,614 acres) would be considered for a Rural Living (RL) designation to avoid future conflicts with DoD activities. Existing land use categories would remain on lands in the disposal (132,768 acres) zones (see Section 3.5.2 for definitions of land use categories).

2.4.6.4 Public Health and Safety

A Safety-Noise Overlay would be considered for the consolidation (264,288 acres) and retention zones (124,544 acres) to prevent future conflicts with DoD activities.

2.5 SURVEY OF EFFECTS

An Impact Score summary is provided in Table 2.2. This table summarizes the effects on resources of concern for each alternative.



LTA REVISION 2

Figure 2.6 LTA Project Area, Alternative VI (Proposed Action)

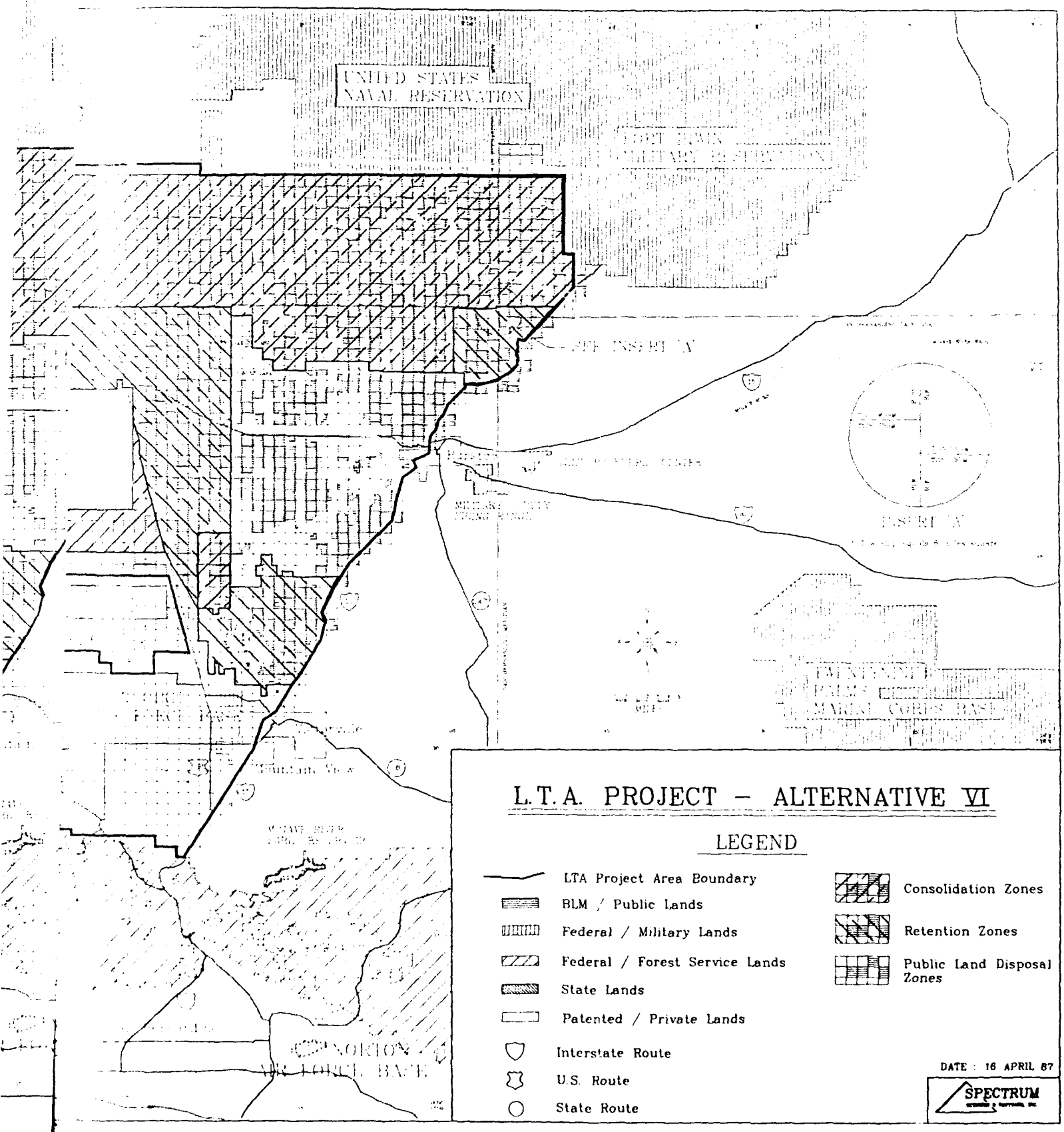

UNITED STATES
NAVAL RESERVATION
L.T.A. PROJECT – ALTERNATIVE VI
LEGEND
LTA Project Area Boundary
BLM / Public Lands
Federal / Military Lands
Federal / Forest Service Lands
State Lands
Patented / Private Lands
Interstate Route
U.S. Route
State Route
Consolidation Zones
Retention Zones
Public Land Disposal Zones
DATE : 16 APRIL 87
SPECTRUM

TABLE 2.2 SUMMARY COMPARISON OF ALTERNATIVES AND EFFECTS

RESOURCES	ALTERNATIVE I	II	III	IV	V	VI
Air	4 / 4	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1
Groundwater	4 / 4	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1
Surface Water	4 / 4	2 / 1	2 / 1	2 / 1	2 / 1	2 / 1
Geology	4	4	4	4	4	4
Soils	4	4	4	4	4	4
Paleontology	3	2	2	1	1	1
T and E Wildlife	4	4	4	4	4	4
Sensitive Wildlife	3 / 3	2 / 2	1 / 1	1 / 1	5 / 6	1 / 1
Wildlife	3	2	2	1	2	1
T and E Plants	4	4	4	4	4	4
Sensitive Plants	3 / 3	2 / 1	2 / 1	2 / 1	4 / 4	1 / 1
Plants	2	2	3	3	1	1
Cultural	3	6	2	5	5	6
Native American	4	4	4	4	4	4
Recreation / Public Access	3 / 3	6 / 6	6 / 2	6 / 6	6 / 1	6 / 1
Visual / Aesthetics	2 / 2	1 / 6	6 / 6	6 / 6	6 / 6	6 / 6
Noise	4	4	4	4	4	4
Socioeconomic	4	4	4	4	4	4
ACECs	3 / 3	2 / 1	1 / 6	1 / 1	6 / 6	1 / 1
WSA	4	6	6	6	6	6
Range / Grazing	3 / 3	2 / 6	2 / 6	5 / 6	6 / 6	5 / 6
Agricultural	4	3	6	5	5	5
Minerals	4	2	2	2	2	2
Utility Corridors	4	4	4	4	4	4
Military Testing	1 / 1	1 / 1	5 / 6	6 / 6	6 / 6	5 / 6

Impact Score	85	85	77	81	84	86	88	85	99	92	85	79

Designation Codes

1 = Resources subjected to degradation.
2 = Resources not in jeopardy, some degradation would result.
3 = Resources not in jeopardy, minimal protection afforded.
4 = No Impact
5 = Resources protected, values not enhanced.
6 = Resources benefited, enhanced protection of values possible.

3. AFFECTED ENVIRONMENT

3.0 INTRODUCTION

Information presented in this chapter provides a description of the environment(s) potentially affected by the LTA Project. Environmental resources are described under the headings of: 3.1 - General Description of Project Area; 3.2 - Physical Environment; 3.3 - Biological Environment; 3.4 - Human Environment, and 3.5 - Existing Land Classification and Uses in the LTA Project Area. The General Description includes location, climate and topographic information. The Physical Environment section includes air, water, geologic, paleontology and soils information. Information presented in the Biological Environment includes ecosystem types, wildlife resources (including threatened and endangered, sensitive species) and plant resources (including threatened and endangered, sensitive species). Human Environment includes archaeological, cultural, historic, Native American resource values, recreation, public access, visual and aesthetic resources, noise factors and socioeconomic factors. Under Existing Land Classification and Uses in the LTA Project Area, information on BLM Multiple Use Classifications, San Bernardino County Land Use Categories and Military Testing/Training Requirements are presented. Also presented is information on Range and Grazing Resources, Mining/Mineral Access/Energy Development and Utility Corridors and Access.

3.1 GENERAL DESCRIPTION OF PROJECT AREA

Within the Mojave Desert, the LTA Project Area is located in the western portion of the geographic area designated as Western Mojave. The LTA Project Area is mostly desert, interspersed with urban and agricultural development, and playas. From ecological, cultural, and socioeconomic viewpoints, the LTA Project Area is extremely diverse and complex.

3.1.1 LOCATION OF PROJECT AREA

The Mojave Desert and the Project Area lie between the Great Basin Desert to the north and the Sonoran Desert to the south. Ecologically, the Mojave Desert incorporates floristic (vegetation) elements of both the Great Basin and Sonoran Deserts as well as its own endemic species (Rowlands et al. 1982). Though classed as a desert, the Mojave is an ecologically diverse area. The geographic center of the Mojave Desert is approximately 70 miles north-northeast of Los Angeles, California.

Previous works (e.g., Southern Pacific 1964) have used Western Mojave and Eastern Mojave divisions (see Fig. 1.2) The Western Mojave is essentially all land to the west of the San Bernardino Meridian (near Barstow), north of the San Bernardino Base Line (near San Bernardino) and south of the Great Basin (north and west of Las Vegas, Nevada). The western Mojave area of Dibblee (1967) includes the majority of the Southwestern, Central and South-Central regions described by Rowlands et al. (1982). The Project Area is included in this region (see Fig. 1.2).

3.1.2 CLIMATE

Bounded by the mountain ranges of the Sierra Nevada, Tehachapi, San Gabriel and San Bernardino mountains, the entire Mojave Desert is an area of low precipitation. The San Bernardino and Tehachapi Mountains to the south and west capture much of the moisture from the east moving stormtracks. Precipitation is extremely variable from one year to the next and from area to area (Rowlands et al. 1982).

Three types of precipitation events occur in the Mojave Desert: winter storms, summer storms and hurricanes or chubascos (Rowlands 1980). Mean annual precipitation for the Southwestern Region is 4.89 inches, for the Central Region 4.27 inches, and for the South-Central Region 5.34 inches (Rowlands).

Approximately 97 percent of the annual precipitation in the Southwestern Region falls as winter rain. For the Central and the South-Central region the figures are 73 percent and 94 percent, respectively. Potential evaporation exceeds precipitation on an annual basis.

Average annual precipitation ranges from about 2 to 6 inches over the central portion of Antelope Valley (USDA - SCS 1970) while the flanks of the valley may receive higher precipitation. Potential evaporation exceeds precipitation by one to two orders of magnitude. Much of the annual precipitation comes as short duration, high-intensity thunderstorms which result in runoff with little infiltration. Flash floods often flush drainage channels following thunderstorms. Climatic data for Cantil, near the northern boundary of the project area; Barstow, near the northeastern boundary of the project area; Victorville, near the south- eastern boundary; and Palmdale near the southwestern boundary of the project area have been summarized by USDA - SCS (1981), USDA-SCS (1986), Porter (1970) USDA-SCS (1970).

Temperature extremes within the Mojave Desert range from approximately 28 F in January to 117 F in July. Within the Southwestern Region, temperature extremes range from 29 F in January to 99 F in July. Central Region temperatures range from 31 F to 102 F between January and July, and South-Central Region temperatures range from 27 F to 96 F for January and July, respectively.

Climatic patterns have a great effect on the quality and quantity of forage available for grazing and thus on the range resource. Several wet and dry cycles have been noted since settlement with the current dry cycle beginning about 1950 (USDI - BLM 1980b, Appendix 13). In recent times, on the California desert, the dry cycles have been long, resulting in deterioration of the perennial vegetation and an increase in more ephemeral vegetation.

3.1.3 TOPOGRAPHY

Major landforms of the Mojave Desert include hills and mountains, plains and alluvial fans, plateaus, badlands, pediments (rock plains),

river washes, playas (dry-lake beds), and sand dunes (Rowlands et al. 1982). Within these eight landforms, 39 soil groups occur. Extent of each of the major landforms is shown in Table 3.1 (from Rowlands et al. 1982).

TABLE 3.1 EXTENT OF MAJOR MOJAVE DESERT LANDFORMS

Landforms	Percentage of Mojave Desert Area
Hills and Mountains	30
Plains and Alluvial Fans	65
Plateaus	1
Badlands	1
River Washes	1
Playas	2
Sand Dunes	1

3.2 PHYSICAL ENVIRONMENT

3.2.1 AIR RESOURCES

California's Southeast Desert Air Basin contains all of the LTA Project Area (California Air Resources Board 1985).

Gaseous pollutant or multipollutant monitoring sites are located at Barstow, Victorville (2 stations), and Lancaster. Particulate sampling sites are located at Victorville, Mojave, and Boron. Pollutants monitored in the Southeast Desert Air Basin at stations of interest include: Total Suspended Particulates (TSP) at Mojave and Boron; TSP, lead (Pb), sulfate (SO_4) and nitrate (NO_3) at Lancaster; and ozone (O_3), carbon monoxide (CO), nitrous oxide (NO_x), TSP, Pb, SO_4 , NO_3 at Barstow; and O_3, CO, NO_x, TSP, Pb, SO_4, and NO_3 at Victorville. California and National Air Quality Standards are presented in Table 3.2.

The current air quality in Barstow and Victorville is good, particularly in the fall, winter and spring months. In the summer months, May through September, there is an increase in ozone concentrations, which at times exceed State and National Ambient Air Quality Standards. State and National Ambient Air Quality Standards is the best measure to determine the level of impact that the San Bernardino County General Plan may have on air quality.

The state standard for ozone is 0.10 parts per million (ppm) averaged over an hour. Similarly the national standard is 0.12 ppm averaged over an hour. An hourly average of ozone concentration between 0.13 ppm and 0.19 ppm is recognized as unhealthy for sensitive people. Average ozone concentrations greater than 0.20 ppm an hour are considered unhealthy for everyone (First Stage Alert Level).

TABLE 3.2 AIR QUALITY STANDARDS FOR POLLUTANTS OF CONCERN

Pollutant	Standards			
	California		National	
	(ppm)	(ug/m^3)	(ug/m^3) Annual Geometric Mean	(ug/m^3) 24 hrs.
Ozone (O_3)	0.10	200		
Total Suspended (TSP) Particulates (Primary Standard[1])			75	260
Total Suspected (TSP) Particulates (Secondary Standard[1])			60	150
PM10 24 hrs.		50		
Annual Geometric Mean		30		

[1] Primary standards are health based, secondary standards are welfare based.

In reviewing the ozone data for the project area for 1983 through 1985, one can determine that for the months of October through April there were only a few exceedences of the State or National Ambient Air Quality Standards. However, for the summer months, May through September, levels sometimes exceeded both State and National standards. This coincides with the typical "smog season" of Southern California.

The number of exceedences of the State standards over the three year period is shown below:

BARSTOW

YEAR	TOTAL HRS. MONITORED	# HOURS > 0.10 PPM
1983	7684	318
1984	7579	28
1985	5628	114

VICTORVILLE

YEAR	TOTAL HRS. MONITORED	# HOURS > 0.10 PPM
1983	7724	505
1984	8102	494
1985	7806	536

There were substantially fewer exceedences of the National Ozone Standard for the three year period as indicated below:

BARSTOW

YEAR	TOTAL HRS. MONITORED	# HOURS > 0.12 PPM
1983	7684	20
1984	7579	0
1985	5628	3

YEAR	TOTAL HRS. MONITORED	# HOURS > 0.12 PPM
1983	7724	87
1984	8102	93
1985	7806	123

The ozone concentrations above the State and National standards can be attributed mostly to the transport phenomenon from the South Coast Air Basin. This can be determined by analyzing the time of the day the peak concentrations occur. Because ozone is a product of the chemical reaction of nitrogen oxides, hydrocarbons, and sunlight, high concentrations of locally generated ozone would occur in the early afternoon and drop substantially in the evening and early morning time periods. The peak concentrations in Barstow and Victorville, with very few exceptions, occur in the evening (5 p.m. - 8 p.m.) time period, reflecting out-of-area generation. These data, along with studies on the transport phenomenon, would indicate that these high concentrations can be attributed to transport rather than local generation of ozone.

Monitoring of particulate matter is done for a 24-hour period every sixth day. State and National standards have been set in such a manner that there are several levels of concentrations of particulate matter which are applicable. The National standard has a primary, secondary and annual

standard for Total Suspended Particulates (TSP). California Air Resource Board (CARB) has recently changed this standard from TSP to particulate matter under 10 microns (PM10).

In 1983, in the Barstow area, the highest TSP value was 87 ug/m^3, the second high was 85 ug/m^3 and the annual geometric mean was 64 ug/m^3 based upon a total of 20 samples. There were no samples above 100 ug/m^3 (the old State TSP standard).

These Barstow data are somewhat higher for 1984 and 1985 with the highest concentrations being 144 ug/m^3 and 128 ug/m^3, respectively. In the two years there were 4 samples above 100 ug/m^3 and no samples above the 150 ug/m^3 level. The annual geometric mean (AGM) for the two years was 60 ug/m^3 and 63 ug/m^3, respectively.

In the Victorville area in 1983, the highest TSP value was 125 ug/m^3. The second highest was 121 ug/m^3 and the annual geometric mean was 62 ug/m^3. There were seven samples above 100 ug/m^3 (the old State TSP Standard). This is based upon a total of 56 samples.

These concentrations were somewhat higher for 1984 and 1985 with the highest being 192 ug/m^3 and 271 ug/m^3, respectively. In the two years there were 33 samples above 100 ug/m^3, three samples above the 150 ug/m^3 level and one sample above 260 ug/m^3. The annual geometric mean (AGM) for the two years was 82 ug/m^3 and 90 ug/m^3, respectively.

In summary, there are two major influences that degrade air quality in the project area. The first and most important is the transport of ozone from the South Coast Air Basin during the summer months. The second influence is wind blown dust which occasionally exceeds State and National particulate matter standards.

3.2.2 WATER RESOURCES

The LTA Project Area includes a number of closed basins in which drainage water originating from surrounding mountain ranges crosses alluvial deposits and terminates in playas (dry lake beds). The only significant natural drainage flowing through the area is the Mojave River, which is approximately 35 miles of intermittent stream terminating at Soda Lake, a large playa east of the LTA Project Area.

On mountain slopes, normally dry, rocky ravines are scoured by floodwaters of high competence which carry all but the largest detritus. Where gradient decreases, large quantities of alluvial material are sorted in response to the decreasing competence of streamflow combined with evaporative and bed losses. On pediments, drainage channels may be incised in arroyos with banks which collapse during floods as rapid downcutting undermines them. As gradients decrease further, channels may form broad washes with braided segments formed by deposition following runoff events. Where alluvial fans and terraces merge with low-gradient basin flats, channels often converge before ending in terminal playas.

Surface runoff over the broad alluvial landscapes is subject to depletion by both evaporation and bed losses, depending upon channel characteristics and permeability of the substrate. Intermittent streams and drainage segments contain little or no surface water, except following intense local precipitation with corresponding high runoff. During such events, infiltration may be limited relative to runoff, causing erosion and transport of sediments.

Alluvial fans and bajadas are also subject to sheet floods, which occur uniformly over an expansive area, and are loaded with surface sediments to the extent that incipient channels are filled as quickly as they are formed. Such flows are usually absorbed within a short distance of their origins.

There are numerous salient desert landforms in the LTA Project Area. These characteristic landforms include broad alluvial fans, old dissected terraces and playas. Numerous small mountains (inselbergs) occur throughout the area. The larger San Gabriel and San Bernardino Mountains define the desert boundary to the southwest. Mountain slopes are moderately steep to steep. Major watersheds from the San Bernardino and San Gabriel Mountains contribute flow to the Mojave River, which forms the eastern edge of the project area. The Mojave River has three major tributaries within the LTA Project Area: Fremont Wash, Buckthorn Lane and Oro Grande Wash. As with much of the Mojave River itself, water flows above ground along these tributaries only after intense storms.

Anastomosing channels commonly diverge near the valley floors after leaving the mountains and crossing the broad alluvial fans.

There are also numerous closed basins in the LTA Project Area which receive runoff from the surrounding mountains. Water emanating from the mountains drains to ephemeral lakes (playas) or desiccated lake basins and does not flow from these basins.

Named playas within the LTA Project Area include Rogers Lake, Rosamond Lake, Buckhorn Lake, El Mirage Lake, and Harper Lake. Water is depleted from these playas primarily by evaporation, resulting in accumulation of salts and alkali near the mineral surface (Dibblee 1967).

Subsurface water flows are determined by the relative positions of permeable and impermeable materials. Intermittent drainages often surface only where impermeable strata are encountered. Aquifers capped by impermeable strata descend in the Antelope Valley area, causing artesian wells. Such aquifers are used for domestic and agricultural water supplies, some showing declines in flow with continued use.

Water management features in the LTA Project Area include the Los Angeles Aqueduct, which carries water from the Owens Valley to the Los Angeles metropolitan area, and the California Aqueduct (see Map - rear pocket). Other artificial features include the irrigation networks supplied by artesian and pumped aquifers.

The Mojave River dominates the surface water picture. It rises to the south in the San Bernardino Mountains, draining an area of over 200 square miles with annual rainfall up to 40 inches in some places. As it flows from the mountains at Mojave Dam, it produces about 60,000 acre-feet annually, with considerable year-to-year variation. For the 1983 water year mean flow at the Lower Narrows near Victorville was reported (USGS 1983) as 261 cfs (cubic feet per second about 190,000 acre feet). Maximum and minimum flows were 8,950 and 14 cfs respectively. The river continues for about 120 miles to the north and northeast, terminating at Soda Dry Lake, a usually-dry playa near Baker. Streamflow throughout the lower reaches is usually intermittent, though there is some perennial flow near Victorville and Afton Canyon.

The presence of the Mojave River in the midst of an otherwise harsh and arid environment makes it the natural focus of interest. The Victorville-Barstow stretch contains a concentration of irrigated agriculture and rural housing, made possible by the availability of ground water. Though local levee systems of sandy native soils have been constructed in developed areas, they are easily eroded along meanders and cutbanks by moderate flood flows in the river. The river and its associated riparian areas are also of high interest for aesthetic, wildlife, and recreation purposes.

The channel through the desert is cut in alluvial sand and gravel deposits. With only negligible local inflows, it loses water along its course by infiltration into the bed and banks. The Victorville-Barstow stretch loses about 30,000 acre-feet annually, most of which contributes to groundwater recharge.

3.2.2.1 Groundwater

The extent of groundwater resources over the project area is not well known, although it is better defined along the Mojave channel and in the Hinkley area. Elsewhere, if present in significant quantities, the availability of groundwater is limited to alluvial sites. Two distinct groundwater bodies are present. The Upper Basin begins in the San Bernardino Mountains and extends northward. Near Helendale, the Helendale Fault blocks movement of water from the Upper Basin to the north. The Middle Mojave Groundwater Basin is north and east from the Helendale Fault to about 15 miles east of Barstow. Groundwater is found at relatively shallow depths along this stretch, and recharge is almost entirely from channel losses during flow events. Water moves laterally from the river through unconsolidated alluvium at a rate estimated to be between 1000 and 1500 feet per year. The California State Water Resources Control Board is currently studying the overdraft issue in the Mojave Basin but has not yet made a final determination on the issue.

There are some distinct groundwater quality problems in the Middle Mojave Groundwater Basin. In the LaDelta area (about 9 miles north of Victorville) total dissolved solids (TDS) range from about 500 to 1000 mg/l, and further downstream at Helendale the TDS varies from approximately 800 to 2250 mg/l. This latter situation is thought to be associated with

mineralization invoked by the Helendale Fault. Otherwise, the TDS of groundwaters is in the 300-400 mg/l range, with a vague overall rising trend in the downstream direction. Some of this may be caused by the salt concentration effects of irrigated agriculture. Also, there is some groundwater pollution in the Barstow area which resulted from past industrial spills. Fluoride levels of 0.4 to 0.6 mg/l have been reported (USGS 1983) near Barstow and may pose water quality standard violations. Other than the exceptions mentioned, the quality is generally good, and sufficient for almost all beneficial uses.

The Upper Basin has an annual overdraft (consumptive use less recharge) of about 30,000 acre-feet, and the Middle Basin about 10,000 acre-feet. In the area of concern the overdraft may be estimated at about 30,000 acre-feet per year. This would be amplified by privatization and development of lands in the area as additional demands are serviced. Continued overdrafts and quality problems associated with domestic, industrial, and agricultural wastes can be expected to degrade water quality in the future. Furthermore, as water levels drop, pumping costs will increase and the more mineralized lower waters will mix with the fresh recharge waters.

3.2.2.2 Surface Water

Surface water resources in the LTA Project Area are extremely limited in size and number. Principal areas of surface water (see map in pocket) in the LTA Project Area include:

1) Lacustrine marsh near Harper Dry Lake
2) Fremont Wash, Buckthorn Wash, Oro Grande Wash, North Lake area
3) An unnamed lake in Sec. 5 T.32S., R.41E., SBBM
4) Other ephemeral washes
5) Harper, Cuddeback and Superior Dry Lakes (playas)
6) Mojave River and Buckhardt Lake
7) Oak Creek in Antelope Valley

Harper Dry Lake Marsh

A lacustrine (lake-produced) marsh of approximately 200 acres lies on the southwestern edge of the Harper Dry Lake portion of the marsh area within the BLM ACEC (Area of Critical Environmental Concern). Within the Mojave Desert this is a unique habitat. The three isolated pockets of marsh habitat are currently maintained by agricultural irrigation return flow from adjacent lands not administered by BLM. Some water may be contributed to the marsh system from artesian springs and rainfall.

Current BLM plans for the ACEC (see Section 3.5.1.5) include acquisition and development of land and independent water sources.

Fremont Wash, Buckthorn Wash, Oro Grande Wash, North Lake

Fremont and Buckthorn Washes are ephemeral drainage areas which channel water to North Lake. Fremont Wash continues past North Lake to the

Mojave River. Buckthorn Wash is diverted around North Lake. North Lake is an artificial water body associated with a housing development. None of these areas are associated with a designated flood plan.

Section 5 Lake

An unnamed lake exists on private land in Section 5 of T.32S., R41E., SBBM. No information or characteristics are available concerning this lake.

Ephemeral Washes

Numerous ephemeral washes exist throughout the LTA Project Area. Documentation of the nature of the seasonal or annual flow in these washes is outside the area of consideration of this draft EIS/EIR. Values of and effects on washes will be described as needed in subsequent environmental documents.

Harper, Cuddeback and Superior Dry Lakes

These three lakes are playas. During precipitation or runoff, they may be covered with water to a depth of several inches.

When flooded, these sites may provide resting and/or feeding areas for waterfowl during the winter season. Usefulness of the water is restricted by its seasonability and the accompanying water quality (alkalinity/salinity).

Harper Dry Lake, in association with the existing marsh, is maintained at least in part by agricultural effluent from surrounding land. A portion of the playas and the accompanying marsh are contained within the Harper Dry Lake ACEC.

Mojave River and Buckhardt Lake

On the northern slopes of the San Bernardino Range, the Mojave River flows northward into the LTA Project Area and turns easterly and out of the LTA Project Area near Barstow. Total length of the river, varying seasonally, is approximately 100 miles (Houghton 1976). The total channel length within the LTA Project Area is approximately 35 miles. Along its course through the desert, the Mojave is intermittent or underground. The drainage area of the Mojave River at Barstow is 1,291 square miles. The average discharge, based on 53 years of record, is 26.6 cfs. For the 1983 water year, mean discharge was 129 cfs, maximum discharge was 7,520 cfs, and minimum discharge was 0.0 cfs.

Buckhardt Lake is a small reservoir in the Mojave River channel which is regulated by river flows.

Oak Creek, Antelope Valley

Oak Creek, 10.5 miles west of the city of Mojave, has a drainage area of 15.8 square miles. The average discharge in 26 years of record is

1.27 cfs. For water year 1983, the total discharge was 6,380 acre-feet, the mean discharge was 8.1 cfs, the maximum discharge was 91 cfs and the minimum discharge was 0.19 cfs.

3.2.3 EARTH RESOURCES

3.2.3.1 Geology and Minerals

The project area is within Antelope Valley, a large structural basin in the western portion of the Mojave Desert and is included in the Sonoran Desert Section of the Basin and Range Physiographic Province (Fenneman 1931). The wedge-shaped Mojave block is bordered on the northwest by the Tehachapi Mountains which rise to over 7,900 feet, and on the southwest by the San Bernardino Mountains which rise to 10,080 feet. Exposed Tertiary formations are strongly deformed and alluvium-filled areas are underlain by large structural basins or downwarps (Dibblee 1967). Within the extensive areas of alluvium and playa surfaces characterizeing most of Antelope Valley, are irregularly-trending bedrock hills and minor ridges (Dibblee).

The surficial geologic strata of Antelope Valley include three main types of material: (1) unconsolidated and slightly-consolidated sediments and local basalt flows of Quaternary age; (2) consolidated sedimentary and volcanic rocks of Tertiary age; and (3) igneous and metamorphic rocks of pre-Tertiary age (Dibblee 1967).

Unconsolidated and slightly-consolidated deposits of Quaternary age cover the greatest extent of the LTA Project Area. These include extensive areas of unconsolidated alluvium, windblown sand and playa clay, and areas of older alluvium which has been slightly consolidated and dissected by surface runoff. Low hills distributed throughout the central portion of the LTA Project Area are mostly comprised of plutonic quartz monzonite of pre-Tertiary age with less extensive exposures of Quaternary basalt. Less extensive exposures of other volcanic and granitic formations are also common (Dibblee 1967).

About two-thirds of the project area in the western Mojave desert is on Quaternary alluvium, Quaternary lake deposits, and Pleistocene nonmarine rocks. Older rock formations are exposed on scattered hills in the area. The more important or larger of these are mentioned below.

Around Edwards Air Force Base there is a broad expanse of Mesozoic granitic rock. In this area, along the Los Angeles/San Bernardino County line, there are some Tertiary intrusives in the Mesozoic granite. Tertiary intrusives occur along the west edge of the project area in Kern County also.

The mountains north of Victorville in the southeastern part of the LTA Project Area are mostly Jura-Triassic metavolcanic rocks and undivided Carboniferous marine rock.

Directly north of Victorville and northwest of Barstow, large blocks of volcanic basalt are exposed in the Black and Opal Mountains. Upper Miocene (non-marine) rock occurs in the Gravel Hills to the west.

To the north of these hills, in the far northeast corner of the project area and adjacent to Camp Irwin, the desert hills are Mesozoic basic intrusive along with commonly occurring Mesozoic granite similar to that around Edwards Air Force Base. To the north of these hills in the area of Goldstone the hills are Paleozoic marine rock with limestone and dolomite outcrops. To the far north of the project area on the edge of the Naval Weapons Center, is Tertiary volcanic rock which becomes very common further north on the Naval Range itself.

Mineral deposits within the project area are represented by Tertiary hydrothermal base and precious metal mineralization within fault and fissure conduits in plutonic and volcanic intrusive rocks. These deposits are represented by mining activity in the Mojave-Rosemond mining districts. In addition, metasomatic replacement of carbonate rocks and low temperature hydrothermal mineralization have formed base and precious metal deposits as represented by mines within the Oro Grande mining district. Nonmetallic mineralization within the project area includes late Paleozoic marine limestone and dolomite deposits and Late Cretaceous to Early Tertiary metasomatic and hydrothermally altered carbonate and volcanic rocks forming talc, boron minerals, and bentonitic, kaolinitic and illitic clays. Periods of volcanic activity from Tertiary to Recent time have formed pyroclastic deposits of cinders, tuff, quarry stone, and pumice, and associated alteration products such as deposits of pozzolana and perlite. cenozoic weathering of upland plutonic and volcanic rocks formed nonmarine bedded clay, silt, sand and gravel deposits.

3.2.3.2 Paleontology

Several known and potentially sensitive fossiliferous geologic formations are found within the LTA Project Area. Generally, these include Quaternary gravels, alluvial, colluvial, and lacustrine deposits. Quaternary deposits occur in locations throughout the LTA Project Area, particularly in the plains or valleys. Several of these valleys contain dry lakes or playas, each of which is sensitive for paleontological resources. Some fossil-bearing formations of Middle Tertiary age (Miocene) are also exposed in the project area, primarily in the Gravel Hills north of Harper Lake and northwest of Saddleback Mountain near Boron.

Rainbow Basin, long known for the fossils of ancient mammals exposed in sedimentary rock, was designated as a "National Natural Landmark" in 1972 by the Secretary of the Interior. In 1980, in recognition of the geologic and other outstanding natural values in the area, Rainbow Basin was identified as an "Area of Critical Environmental Concern" and is currently administered under that management designation (see Section 3.5.1.5).

3.2.3.3 Soils

Soils of the LTA Project Area (see Table 3.3) have been described for the southeastern part of Kern County (USDA - SCS 1981), the Mojave River area of San Bernardino County (USDA - SCS 1986), the northern part of Los Angeles County including parts of Antelope Valley (USDA - SCS 1970) and the southwestern desert area (Porter 1970). The distributions of soils described for the LTA Project Area generally correspond with three geomorphic positions:

(1) Steeply to moderately sloping residual positions on mountains and low hills.

(2) Gently sloping alluvial fans, terraces and basin rims.

(3) Nearly level floodplains, basins and playas.

The nomenclature for soil map units is not consistent among soil surveys conducted for Antelope Valley in Los Angeles County (USDA - SCS 1970), San Bernardino County (USDA - SCS, 1986), and Kern County (USDA - SCS, 1981). These discrepancies preclude integrating soil inventories for the LTA Project Area. Porter (1970) prepared a general soil map for that portion of San Bernardino County included in the LTA Project Area.

3.3 BIOLOGICAL ENVIRONMENT

3.3.1 ECOSYSTEM TYPES

The Mojave Desert is bordered by the Great Basin Desert on the north and the Sonoran Desert on the south. It contains vegetation of both neighboring deserts and has been described as an ecotone between the two (Rowlands et al. 1982). All six of the major vegetational complexes present in the Mojave Desert in California as outlined by Rowlands et al. are represented in the LTA Project Area.

3.3.2 WILDLIFE RESOURCES

3.3.2.1 General

The LTA Project Area supports more than 300 species of vertebrates including 68 species of reptiles, at least 134 species of birds, and 115 species of mammals. Of the 115 species of mammals, 55 belong to the order Rodentia.

Large numbers (134 species) of birds, including two federally listed species, have been observed in the Harper Dry Lake ACEC. The non-native western mosquitofish (Gambusia affinis) also is in the area.

TABLE 3.3 APPROXIMATE AREAS OF SOIL MAP UNITS IDENTIFIED IN SAN BERNARDINO COUNTY (Porter, 1970)

GROUPS	AREA (Sq. mi)	LTA (Percent)
Deep, Coarse-Textured Alluvial Soil		
Cajon Assn. (0-9% slope)	73	4.8
Arro-Daggett Assn. (0-15% slope)	166	10.8
Heoparia-Rosamond Assn.	27	1.8
Saline-Alkali Soil		
Rosamond-Oban Assn. (Saline-Alkali)	34	2.2
Casa Grande-Barstow Assn. (Saline-Alkali)	16	1.1
Very Deep, Alluvial Soil		
Adelanto-Mohave Assn. (0-9% Slope)	163	10.6
Adelanto-Hesperia Assn. (2-9% Slope)	7	0.5
Moderately Deep Soil		
Mohave-Adelanto Varients Assn. (0-15% slope)	347	22.5
Mohave Varient-Sunrise Assn. (0-15% slope)	211	13.7
Sunrise Assn. (0-3% slope)	40	2.6
Shallow Soil		
Calvista-Hi Vista Assn. (2-15% slope)	106	6.9
Miscellaneous Land Types		
Dune Land Assn.	8	0.5
Playas Assn.	18	1.2
Rock Land Assn.	299	19.4
Riverwash Assn.	25	1.7

3.3.2.2 Threatened and Endangered Species

The following wildlife species are federally listed as threatened or endangered, and have been sighted or reside in the LTA Project Area:

Bald Eagle (Haliaeetus leucocephalus)

Bald eagle is federally listed as threatened by the U.S. Fish and Wildlife Service (50 CFR 17.11). Bald eagle nests are generally built within two miles of water in a dominant or co-dominant tree. Although its primary food resources are fish, waterfowl, and seabirds, it is an opportunistic feeder and will eat mammals and carrion (Green 1985). Harper Dry Lake is the only permanent "body" of water in the LTA Project Area, hence the only suitable habitat for the bald eagle.

Yuma Clapper Rail (Rallus longirostris yumanensis)

Yuma clapper rail is listed as endangered by the U.S. Fish and Wildlife Service (50 CFR 17.11). It is the only race of clapper rail that inhabits freshwater in the breeding season (Anderson and Ohmart 1985). A single Yuma clapper rail was sighted in the Harper Dry Lake area, 150 miles from the nearest established populations. The known range of the Yuma clapper rail extends south from Needles, California, along the Colorado River through Arizona and into Mexico. In addition, these marshbirds inhabit the Salton Sea in California, two small marsh areas adjacent to the Salt River near Phoenix, Arizona, and two marsh areas along the Gila River, Arizona (Tomlinson and Todd 1973). The emergent vegetation and shallow water present at Harper Dry Lake would provide the Yuma clapper rail with its preferred habitat (Anderson and Ohmart 1985), but its residence there has not been verified (USDI - BLM 1982). The sighting at Harper Dry Lake is an isolated incidence of this species. It is not considered to represent an established population.

3.3.2.3 Sensitive Species

Desert Tortoise (Gopherus agassizii)

Status

The Desert tortoise is a candidate species for federal listing by the U.S. Fish and Wildlife Service. It is under consideration for listing as threatened or endangered by the California Fish and Game Commission and the U.S. Fish and Wildlife Service (USDI, Fish and Wildlife Service 1985); it is currently designated "fully protected" by the State of California and "sensitive" by the Bureau of Land Management.

Density

There are four major and four minor tortoise populations in different areas of Arizona, Nevada, Utah and California. One of the major populations is the Western Mojave population which occurs within the boundaries of the LTA Project Area (Berry 1984). Densities of desert

tortoise in this area range from 20 to more than 250 tortoise per square mile (see Fig. 3.1). It is hypothesized that in the past, areas supporting densities of 200 to 2000 tortoise per square mile served as "nurseries"; individuals then migrated from these areas to areas of lower density. Berry (1984) doubts that even undisturbed populations of less than 50 individuals per square mile can survive without an adjacent higher density population, and believes that the key to managing and maintaining tortoise populations may lie in protection and maintenance of these "nurseries". An area designated as the "Fremont-Stoddard" crucial habitat area also occurs within the LTA Project Area (USDI - BLM 1980a).

Activity

Desert tortoise is active during the early spring and fall, less active in the summer, and dormant in the winter (Schamberger and Turner 1986). In early spring, tortoise comes out of dormancy and begins to forage on green annuals. This is also the time of peak breeding activity. Clutches of 2 to 14 eggs (5-6 average) are laid into burrows beginning in May (Turner et al. 1986). A female may lay from one to three clutches of eggs per year. Hatchlings emerge in the fall, but remain close to the burrow. Low hatching success and high levels of predation on eggs and hatchlings contribute to the species' low reproductive success. During the summer, tortoise retreat into burrows or under shrubs and become dormant to reduce heat stress and water loss. Milder temperatures in the fall allow tortoise to remain active most of the day. From October through February tortoise is dormant and remains in three to nine-foot (1 to 3 meter) deep burrows.

Habitat

Both physical and vegetative characteristics are important components of desert tortoise habitat. Preferred physical characteristics in the Western Mojave include the following: terrain of low relief including bajadas, valleys and rolling hills, an elevation between 2100 and 3221 feet (640 and 1000 meters); winter rainfall of 3.1 to 5.1 inches (8 to 13 centimeters); and sandy to fine gravely soils (USDI - LADWP, 1985). Tortoise tends to avoid areas of river washing, requiring soils that are friable enough for digging, but with enough structure to retain burrows.

The three plant communities of major importance to desert tortoise in the western Mojave are the creosote bush shrub, saltbush shrub (alkali sink), and Joshua tree woodland (Berry 1984, Chapter 4). Tortoise density is highest in areas dominated by one to two perennial species with a high percentage of ground cover by these perennials (low percent cover in Joshua tree woodlands), with high production of annuals.

Food Habits

Desert tortoise consume green annuals in the early spring, switch to perennial grasses, dry annuals and cacti in the late spring and summer, and switch again to green annuals if summer rains provide a second growth.

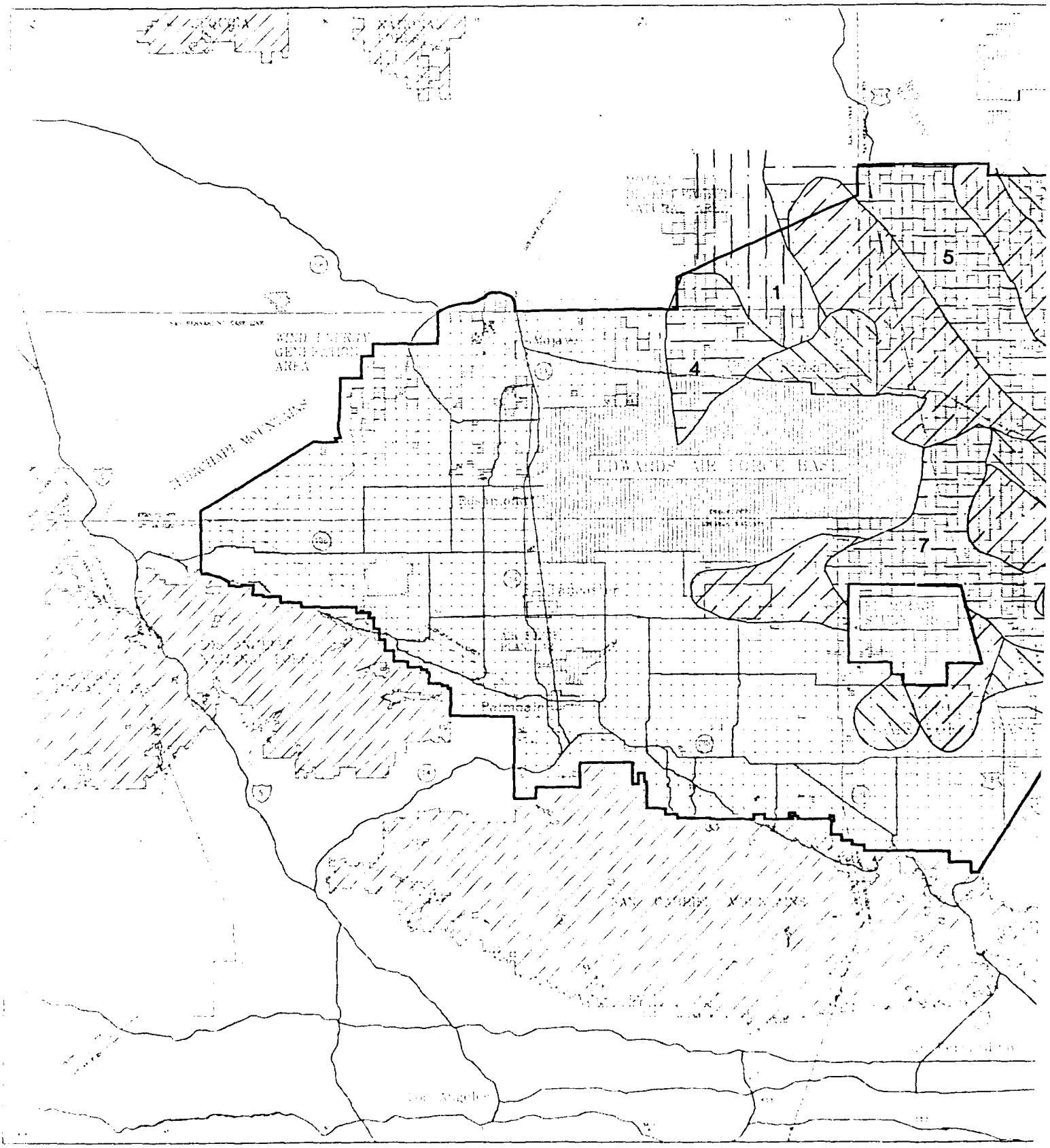
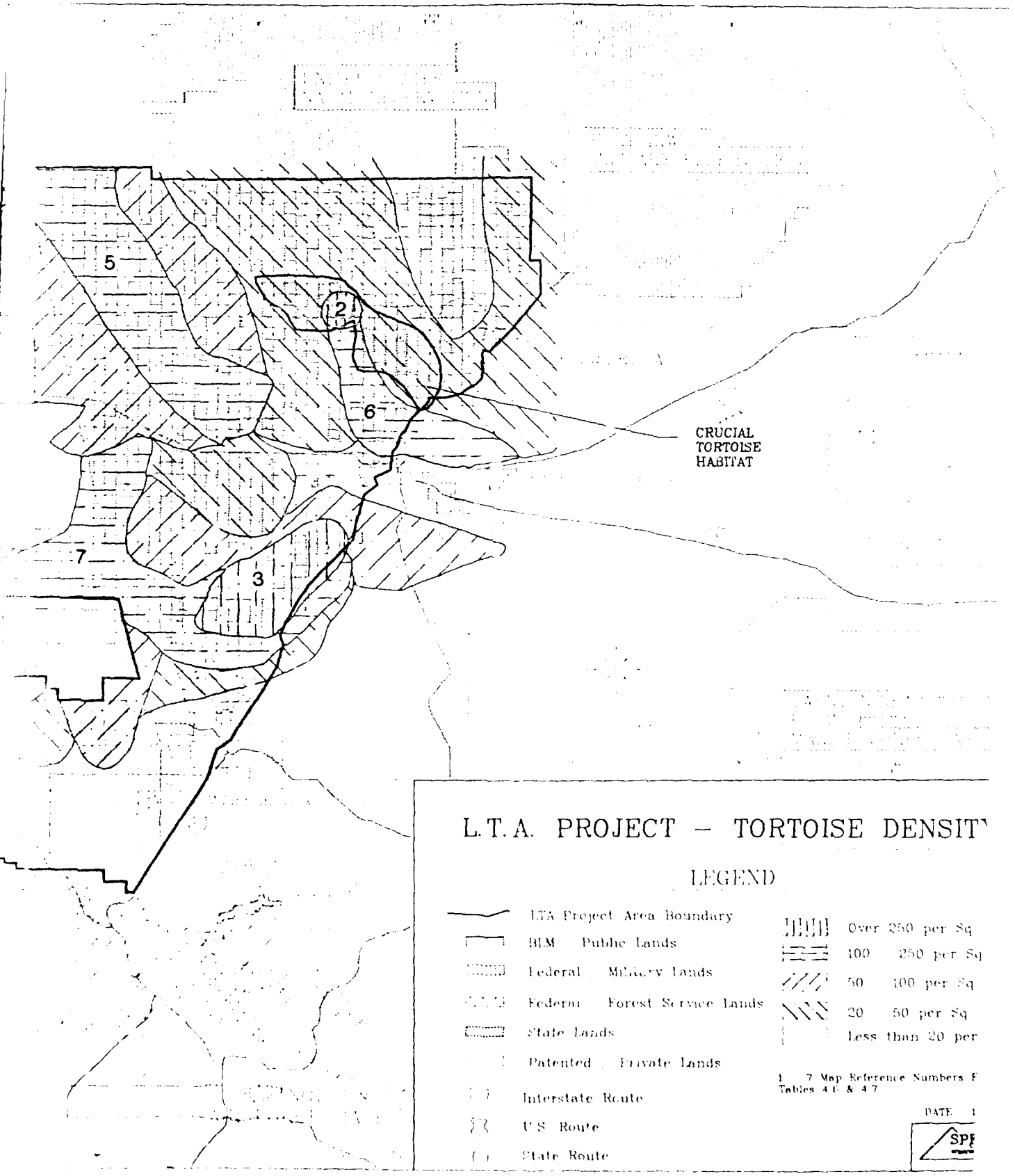


Figure 3.1 LTA Project Area - Tortoise Density


5
2
6
7
3
CRUCIAL
TORTOISE
HABITAT
L.T.A. PROJECT – TORTOISE DENSIT
LEGEND
LTA Project Area Boundary
BLM Public Lands
Federal Military Lands
Federal Forest Service Lands
State Lands
Patented Private Lands
Interstate Route
U.S. Route
State Route
Over 250 per Sq
100 250 per Sq
50 100 per Sq
20 50 per Sq
Less than 20 per
Map Reference Numbers F
Tables 4.C & 4.7
DATE

Common annuals consumed include locoweed (Astragalus spp.), Gila (Gilia spp.), blazing star (Mentzelia spp.), desert dandelion (Malacothrix spp.), and phacelia (Phacelia spp.) (USDI - BLM 1985). Other genera and species found in the stomachs of desert tortoise in Ivanpah Valley include: narrow-leaved forget-me-not (Cryptantha angustifolia), comb-bur (Pectocarya) spp., desert buckwheat (Eriogonum spp.), small flowered blazing star (Mentzelia albicaulis), Booth primrose boothii),big tooth-leaved primrose (C. dentata), Wallaces sunflower (Eriophyllum wallaci), and pebble pincushion (Chaenactis carphoclinia), (Medica et al. 1982). As annuals dry, tortoise in the Ivanpah Valley also consumed cacti and perennial grasses including beavertail (Opuntia basilaris), pencil cholla (O. ramosissima), cholla (O echinocarpa), hedgehog cactus (Echinocactus spp.), cheesebush (Hymenoclea salsola), and dry grasses (Festuca octoflora and Hilaria rigida). During summer aestivation and winter dormancy tortoise use their stored fat.

Mohave Ground Squirrel (Spermophilus mohavensis)

Status and Range

Mohave ground squirrel inhabits only a restricted portion of the Mojave Desert (from Olancha in Inyo County south to Victorville, and the Tehachapi Mountains in Kern County east to the Granite Mountains in San Bernardino County). It has one of the smallest geographic distributions of ground squirrels in North American (Aardahl and Roush 1985, USDI - BLM 1985). The California Fish and Game Commission designated the Mohave ground squirrel as rare in 1971 (Hoyt 1972) and designated all rare species as threatened in 1985. It is present throughout most of the LTA Project Area (Aardahl and Roush).

Activity

Mohave ground squirrel hibernates in underground burrows from August through March, and is diurnally active from March through July. Even during its "active" part of the year it can enter into aestivation when conditions become too stressful (Ingles 1965).

Habitat

Physical and vegetative characteristics can be used to describe the preferred habitat of the Mohave ground squirrel. Physical characteristics include the following: flat topography, especially large alluvial filled valleys; an elevations between approximately 1,475 to 4,921 feet (450 to 1,500 meters); medium to fine textured soils; and, an absence of surface rocks (i.e., desert pavement). The presence of surface rock or shallow soils with rapid drainage will discourage inhabitation by Mohave ground squirrel (Aardahl and Roush 1985).

Mohave ground squirrel inhabits a wide variety of vegetative communities including creosote bush scrub, saltbush (alkali sink), shadscale scrub, and Joshua tree woodland (USDI - BLM 1985). Common to all these communities is the presence of a variety of perennial shrubs

including creosote bush (Larrea tridentata), bursage (Ambrosia dumosa), and saltbush (Atriplex) especially Mohave saltbush (Atriplex spinifera) (Aardahl and Roush 1985).

Diet

Green vegetation makes up the majority of the diet of the Mohave ground squirrel. This is inferred from a noticeable decrease in activity when food supplies become unavailable and temperature is still within the species normal range for foraging (Aardahl and Roush 1985).

Mohave Vole (Microtus californicus mohavensis)

Mohave vole is of special interest because of its very limited distribution. Prior to May of 1983, the rodent was thought to be confined to the riparian habitat along the Mojave River, but has since been found in the marshes along the western shoreline of the Harper Dry Lake playa. It is suspected that this isolated population of Mohave vole is not due to recent immigration, but is a remnant of the population that was present when historic wetland areas connected the Mojave River and Harper Dry Lake (USDI - BLM 1983).

3.3.3 PLANT RESOURCES

3.3.3.1 General

Precipitation is low primarily because the area is in the rainshadow of the mountains to the west. This effect is recognizable in the plant species growing in the LTA Project Area.

The LTA Project Area supports more than 700 species of vascular plants. This estimate is from rough checklists, as comprehensive inventories and detailed vegetation mapping are not available. Good studies exist which document protection needs for ACECs and Significant Ecological Area (SEAs).

Transpiration in plants is affected by high temperature, low humidity, and wind in the region. This combination produces high evaporation rates from plant surfaces that affects transpiration rates.

Mojave Desert vegetation is composed (except in low alkaline flats and old lake beds) of perennial shrubs of small to moderate stature. Moderately tall yuccas (up to 16 ft or 5 m), including the Joshua tree, are the exception. These generally occur at higher elevations. In the LTA Project Area, creosote bush (Larrea tridentata) alone or with burrobush (Ambrosia dumosa) form the most characteristic plant association. Shreve estimates that this association dominates 70 percent of the Mojave Desert area (Barbour and Major, 1977).

While cacti are present in the Mojave desert, the diversity of species is not as high as in the Sonoran Desert. Most annuals of the desert germinate in the winter (MacMahon and Wagner 1985).

Estimates of the number of vascular plant species in the Mojave desert range from about 757 (Raven in Barbour and Major, 1977) to 1750 to 2000 (Rowland et al. 1982). The latter study estimates 663 species for the Southwest Mojave Region which is considered to have the lowest number of species of the Mojave Desert regions.

Raven considers 22 of the 757 species as endemic; six other Mohave endemics occur in regions east of the mountains, and at least seven others range into Nevada or northwestern Arizona.

Major vegetation associations in the LTA Project Area are characterized as follows:

Shrub--high diversity (complex mountain habitat). Dominant species include creosote bush, burrobush (Ambrosia dumosa), shadscale (Atriplex spp.), buckwheat (Erigonum), spiny hopsage (Grayia spinosa), brittlebush (Encelia farinosa), cactus, and Mormon tea (Ephedra spp.). This plant association is found in the Calico, Newberry, and Black Mountains.

Shrub--moderate diversity. This association has a moderate cover of creosote bush, burrobush, Mormon tea, and grasses and is often transitional between high diversity and low diversity scrub.

Shrub--low diversity. This association has a characteristic low cover of creosote bush, burrobush, and desert holly (Atriplex hymenelytra). Desert pavement is common (sensu, Munz, 1974).

Shrub-Grassland Complex. This complex is dominated by saltbush and big galleta grass, and forms the common association for the Edwards Air Force Base area. It occurs in heavy soils which often have an underlying hardpan. It is a low shrubby vegetation often found near Joshua tree woodlands where annual rainfall is from 6 to 15 inches. Common species include Chrysothamnus, Eurotia lanata, Gutierrezia sarothrae (Munz, shadscale scrub). The western Mojave saltbush association occurs within this complex. (discussed later in this report as an Unusual Plant Assemblage, UPA).

Barren to Low Cover Shrub. Mostly at the elevations of creosote bush and below 4,000 feet, these are composed of barren lands and playas, alkali flats and low places with poor drainage. The dominant plants here are often the fleshy halophytes (Allenrolfea, Salicornia, Atriplex, Suaeda) with salt grass (Distichlis) creosote brush, burrobush, Dicoria, spanish needle, and introduced plants such as tamarisk.

Woodland--low cover. Dominated by Joshua trees, shadscale, creosote bush, Yucca schidigera, Salazaria, Lycium, Salvia, Eriogonum, and grasses, this association occurs at 2,500 to 4,000 feet. Rainfall is 6 to 15 inches per year, part of which is in the form of summer showers. This cover type extends from the extreme west to the east parts of the Mojave Desert. (Munz, Joshua Tree Woodland.)

Woodland--high cover. Dominated by Joshua tree at lower elevations, juniper, scrub oak, grasses, and north of the study area, sagebrush, this woodland association occurs from 4,000 to 8,000 feet and receives 12 to 20 inches of precipitation. Other common species are the shrubs Cowania, Fallugia, Cercocarpus and Purshia (Munz, Pinyon-Juniper Woodland).

Numerous studies have been done on the various regions of the Mojave Desert although there is less comprehensive work on the entire desert. In California, besides the broader descriptions of California plant communities by Munz, Ornduff, Knapp, Kuchler, Jaeger and Smith, Barbour and Major, and Thorne, there are more regional discussions of the Mojave desert plants and their associations by Rowlands, Prigge, Leary, and others. Moreover, numerous classification systems have been devised to describe the vegetation of the Mojave Desert in California as well as Nevada, Utah, and Arizona.

The discussion of alternatives, with respect to plant resources presented in Chapter 4, is for the most part limited to that portion of the LTA Project Area that occurs in San Bernardino County, California. This is because, except for a small corner of southeast Kern County and a small corner of north Los Angeles County, all of the land in these two counties is designated for public land disposal. Los Angeles County, in its Draft Environmental Impact Report (Draft Areawide General Plan) of December, 1984, recognizes sixteen SEAs in Antelope Valley which constitutes the southwest corner of the LTA Project Area. Of these, several occur in the LTA Project Area, including the following: Edwards Air Force Base--Protection of the Mojave Spine Flower and Mesquite, which is restricted in distribution on a county wide basis; Rosamond Lake--Shadscale scrub (Western Mojave saltbush) plant community which is restricted in distribution; and Joshua Tree Woodland habitat--protection of relatively undisturbed Joshua tree habitat.

In Kern County, the Joshua tree, (Yucca brevifolia) all species of cacti (Cactaceae) and all mariposa lilies (Calochortus spp.) are protected by county ordinance. In all land disposal activities these county ordinances and planning regulations must be considered and field studies conducted to assure compliance.

Unusual Plant Assemblage

There is one unusual plant assemblage (UPA) within the LTA Project Area (Fig. 2.1). This is the Western Mojave Desert Saltbush (Atriplex spinifera) Assemblage. A UPA is characterized as a stand of vegetation which is recognized as extraordinary due to one or more factors. For Mojave Saltbush Assemblage, it is because of its limited distribution. No single edaphic or hydrological limiting factor for the assemblage has been defined and its existence is undoubtedly due to multiple factors.

An added aspect of interest for this UPA is the fact that it constitutes a significant part of the habitat for Mohave ground squirrel and desert tortoise. The entire Western Mojave Saltbush Association is estimated to be approximately 601,000 acres in size and is mostly within

the LTA Project Area (see Table 4.2). Geographically it is located north of El Mirage, west of Harper Dry Lake, east of California City, and south of Red Mountain.

The major part of the acreage for the Western Mojave Desert Saltbush Assemblage is roughly bounded by the Shadow Mountains to the south, the Iron Mountains and Black Mountains to the east, the alkaline lake beds west of Edwards AFB to the west, and Randsburg and the Rand Mountains to the north. On-site observations may verify that Landsat photography may be used to map this unusual plant assemblage. Daryl Albiston of the BLM Barstow office reports success at correlating this Atriplex spinifera association with soils of restricted depth, such as the Mojave-Adelanto variant. This association consists of well-drained soils with moderately low permeability and stratified sandy loams and clay loam strata over a cemented hardpan. The depth to caliche is significant although presently not well quantitied. The terrain ranges from nearly level to moderately sloping terraces.

3.3.3.2 Threatened and Endangered Species

No officially listed threatened or endangered plant species are known to occur in the LTA Project Area.

3.3.3.3 Sensitive Species

According to the aforementioned laws of both the United States and the State of California (see Section 3.3.3), protective requirements are in place for the treatment of plant species which are of concern but are not presently listed in the Federal Register as threatened or endangered. These species include State of California designated rare, threatened or endangered plants and also BLM sensitive plants. This latter category includes the following: (1) plants identified as candidates (either Category 1 or Category 2) for listing as endangered or threatened by the U.S. Fish and Wildlife Service in a Federal Register Notice of Review; (2) plants that have been officially proposed for listing; or (3) plants which do not meet the above criteria but have been designated as sensitive by the State Director.

For simplicity, all plant species of concern characterized above will henceforth be referred to by the generic appellation, species of concern. This list (Table 3.4) was compiled for the LTA Project Area by drawing upon numerous sources such as herbaria listings, California Native Plant Society publications and personal expertise.

3.4 HUMAN ENVIRONMENT

3.4.1 ARCHAEOLOGICAL/CULTURAL/HISTORIC RESOURCES

Archaeological, cultural, and historic resources include fragile and nonrenewable remains of past human activity, occupation, or endeavors. These endeavors and remains are reflected in districts, sites, structures, buildings, objects, artifacts, ruins, works of art, and natural features

TABLE 3.4 PLANT SPECIES OF CONCERN

Scientific Name	FWS[1]	BLM[2] List	CNPS[3] List	CNPS[4] R-E-D
Astragalus jaegerianus	2	SC(K)	1B	3-1-3
Calochortus striatus	2	other	1B	2-2-2
Chorizanthe spinosa	3	SC(K)	4	1-1-3
Cymopterus deserticola	2	---	1B	3-2-3
Echinocereus engelmanii var. munzii	2	SC(K)	4	1-2-2
Eriophyllum mohavense	2	SC(K)	1B	2-2-3
Hemizonia arida	1	CR	1B	3-2-3
Opuntia basilaris var. treleasei	1	SC(K)	1B	3-3-3
Puccinellia parishii	2	SC(K)	1B	3-2-2
Sclerocactus polyancistrus	3	SC(K)	4	1-2-2
Mimulus mohavense -- possible species of concern based on new evidence and recent botanists' recommendations				

[1] Category Definition - U.S. Fish and Wildlife Service, Federal Register Listing
1 = Sufficient data on file to support listing
2 = Federal Candidate Species
3 = Species No Longer Under Review

[2] Category Definition - Bureau of Land Management
SC(K) = Sensitive Candidate known to be present on public land
CR = State Listed, Rare

[3] Category Definition - California Native Plant Society
1B = Plant rare and endangered in California, listed or eligible for state listing,
4 = Watch list

[4] R-E-D Codes defined by California Native Plant Society
R (Rarity)
1-rare, but low potential for extinction or extirpation
2-several to one population
3-one or few populations, or seldom reported
E (Endangerment)
1-not endangered
2-endangered, portion of range
3-endangered, throughout range
D (Distribution)
1-relatively widespread outside California
2-rare outside California
3-endemic

important in human events. In the LTA Project Area, these resources span a period of at least 10,000 years and possibly longer. Following Warren's taxonomic system (1984; Warren and Crabtree 1986), defined aboriginal cultural periods in the western Mojave Desert are: 1) Lake Mojave Period, 10,000-5,000 B.C.; 2) Pinto Period, 5000-2000 B.C.; 3) Gypsum Period, 2000 B.C. - A.D. 500; 4) Saratoga Springs Period, A.D. 500-1200; and 5) Proto-historic Period, A.D. 1200-Historic. Claims have been made for cultural assemblages predating the Lake Mojave Period (see Davis et al. 1980); however, these remain controversial. Reported archaeological remains attributed to this earlier period occur near the LTA Project Area (e.g., Calico Hills, Lake Manix, and China Lake), but none occurs within the project area.

The aboriginal sequence listed above includes a 10,000-year record of human use and adaptation to the desert conditions in the LTA Project Area, particularly around lakes, rivers, and springs. This selective use of the western Mojave Desert's landscape took place within the context of a hunting-foraging economy. While there are many data gaps in the overall sequence, several useful overviews of past cultural patterns for the LTA Project Area are available. These include BLM publications by Coombs (1979), Davis et al. (1980), Eckhardt and Hatley (1982), Hall and Barker (1981), and Stickel and Weinman-Roberts (1980), all of which were prepared as part of the BLM California Desert Planning Program. Cultural resource overview documents are also available for Edwards Air Force Base (Greenwood and McIntyre 1980) and Kern County (Schiffman and Garfinkel 1981). Lyneis and Macko (1986), Warren (1984), and Warren and Crabtree (1986) provide synthetic statements on the LTA Project Area and the surrounding Mojave Desert region.

Historic Euro-American intrusions into the area began with the explorations of the Spanish Period in the late 1700s, and continued through Spanish occupation of the region, American exploration, and eventual American settlement, transportation, and mining undertakings. Overviews of the area's historic period are available in the Edwards Air Force Base document (Greenwood and McIntyre 1980) and the BLM reports by Hall and Barker (1981) and Stickel and Weinman-Roberts (1980). A useful summary of transportation routes in the Mojave Desert is provided by Warren and Roske (1981) and the region's mining history is detailed by Vrendenburgh (1981) and others. Walker (1986) provides a recent discussion of the history and significance of the Mojave River area in the southeastern sector of the LTA Project Area.

Information concerning known archaeological and historic properties located within the LTA Project Area is available from two primary sources, the California Archaeological Inventory files at the San Bernardino County Museum (SBCM) and the BLM Resource Area offices. A total of 340 sites exist in the LTA Project Area. Recorded sites for the San Bernardino County portion of the LTA Project Area, as obtained from the SBCM, include a total of 328 prehistoric aboriginal and historic properties. Table 3.5 lists the San Bernardino County sites by site type, as defined by the BLM site classification (Coombs 1979, Appendix 1). None of these sites is currently listed on for the National Register of Historic Places and there

TABLE 3.5. LISTING OF RECORDED ARCHAEOLOGICAL AND HISTORIC RESOURCE SITES IN THE SAN BERNARDINO COUNTY PORTION OF THE LTA PROJECT AREA.

SITE TYPE		FREQUENCY/TOTALS
1. Prehistoric		
a.	Village	24
b.	Temporary Camp	26
c.	Transient Rockshelter	2
d.	Occupation Rockshelter	3
e.	Milling Station	2
f.	Lithic Scatter	125
g.	Quarry	13
h.	Cremation Locus	2
i.	Petroglyph	91
j.	Pictograph	1
k.	Petroglyph/Lithic Scatter	4
l.	Petroglyph/Temporary Camp	1
m.	Trail	3
		297
2. Historic		
a.	Dump	3
b.	Mine	5
c.	Structure	2
d.	Camp	2
e.	Railroad Structure	1
f.	Cairn	1
		14
3. Unknown		17
	TOTAL	328

are no State or County landmarks designated within the project area (Ross 1986). However, very few of these sites have actually been evaluated for NRHP eligibility. Of the total, 19 have been tentatively evaluated as eligible and 5 as being potentially eligible. The remainder have not been evaluated. Known site files for the smaller sections of the LTA Project Area located in Kern and Los Angeles counties were reviewed at the Ridgecrest BLM office. Only sites situated on BLM Lands were noted since only land disposal action is proposed for those parts of the project area in these two counties. Of the sites in Kern County, two are historic; the remainder prehistoric. It should be noted that relatively little intensive cultural resource field survey has occurred on BLM lands throughout the LTA Project Area and a considerable number of presently unidentified cultural resource sites are expected to be located on BLM lands in the project area.

Another source for identifying the potential cultural resource settings in the LTA Project Area is sensitive areas or zones which were identified throughout the Mojave Desert by the BLM as part of the earlier California Desert Planning Program. These areas, designated as "polygons", were defined in 1979 on the basis of site file, literature, and limited field inspections. A total of 26 of these polygons falls entirely or partially within the LTA Project Area (Table 3.6), including known and expected prehistoric and historic resources. Each of these polygons falls within either a higher or very high BLM cultural resource sensitivity class. Written descriptions and mapped locations for each polygon are on file at the BLM Barstow and Ridgecrest Resource Area offices.

3.4.2 NATIVE AMERICAN VALUES

Major Native American groups who occupied or used parts of the LTA Project Area include the Serrano and Vanyume (Bean and Smith 1978), Kitanemuk (Blackburn and Bean 1978), and the Kawaiisu (Zigmond 1986). Other groups such as the Mohave, Chemehuevi, and Desert Cahuilla may have had some ties to the area, but corroborative information is generally lacking. General discussions of the ethnographic setting within the LTA Project Area are found in areal cultural resource overviews (Greenwood and McIntyre 1980, Hall and Barker 1981, Schiffman and Garfinkel 1981 and, Stickel and Weinman-Roberts 1980), as well as in some project-specific studies such as the Allen-Warner Valley Project (Bean and Vane 1979) and the Intermountain Power Project (Bean and Vane 1982).

No significant Native American sites were identified as part of the LTA Project cultural resource site file search and no areas of Native American concern are currently known on BLM lands within the project area, either in Barstow Resource Area (Barker 1986) or in the Ridgecrest Resource Area (Oxendine 1986). No Indian Reservation lands are located within the LTA Project Area. As part of their Native American studies for the Intermountain Power Project, Bean and Vane (1982) suggest that the Mojave River area, located in the extreme southeast part of the LTA Project Area, is of high ethnographic significance to the Serrano, Chemehuevi, and Mohave groups for both traditional use and religious sensitivity. Stickel and Weinman-Roberts (1980:219-224) have also noted that contemporary Native

TABLE 3.6. LISTING OF BLM CULTURAL RESOURCE POLYGONS WITHIN THE LTA PROJECT AREA.

Polygon Number	Location	Known Sites	Cultural Resource Sensitivity Class
126	Hamburger Mill, one mile east of Fremont Peak	Six recorded sites, including three prehistoric rockshelters and three prehistoric unspecified site types. Most are located around two small dry lakes.	Very high
127	Fremont Peak	One site, the historic Monarch Road Mine	High
129	Inscription Canyon, from Black Mountain east to Murphy's Well and from Inscription Canyon south to Water Valley	Unknown number of recorded sites. Very high number (several hundred) of prehistoric petroglyphs, temporary camps, villages, lithic scatters, and milling stations, as well as historic mining sites and trails.	Very high
133	McDonald Well, seven miles west of Black Canyon	One prehistoric village site at McDonald Well	High
152	Castle Butte	Three prehistoric sites including a rockshelter with lithic materials, a temporary camp, and a lithic scatter.	High
153	Desert Butte	One known prehistoric site, a rockshelter with pictographs and lithic materials.	High
156	Mountains where the Montano, Gold Divide, and Rio Hondo are located	None recorded although three major mines exist in the polygon.	High
158	Southeastern Foothills of the Slocum Mountains	No recorded sites; however, the polygon includes historic mining activities and the structural remains of Slocum Camp.	High
159	Superior Valley, east of Inscription Canyon	Four prehistoric sites, including two broken metates associated with sand dunes above the old lake shore, and one isolated projectile point. The fourth site is of unknown type.	High

Table 3.6 Continued

Polygon Number	Location	Known Sites	Cultural Resource Sensitivity Class
160	Coolgardie Camp	None recorded, but entire polygon is comprised of the historic Coolgardie mining camp and associated features.	High
161	Williams Well, northwest of Lake Mountain	None recorded, although numerous historic mining features are known to be presented.	High
162	Paradise Spring, on east side of Paradise Range	One known site, located near the spring. The site type is unknown, but is probably a prehistoric temporary camp or village site.	High
174A	Mud Hills	Eight recorded sites, including eight prehistoric lithic scatters or temporary camps, one prehistoric rockshelter, one prehistoric petroglyph site, and the Barstow Fossil Beds.	Very High
174B	Owl Canyon, in the Mud Hills	Three prehistoric sites, all located on terraces above the wash. Included are one temporary camp, one lithic scatter, and one isolated projectile point.	Very High
175	Water Valley, east of Harper Lake	One prehistoric site of unspecified type, possibly a temporary camp.	High
176	East side of Harper Lake, adjacent to Polygon 175	Four recorded sites, all prehistoric, including three campsites and one unknown type.	Very High
177	Eastern end of the Kramer Hills	None, although historic mining resources are expected.	High
178	Red Buttes	Nineteen recorded sites, including fourteen prehistoric lithic scatters, one aboriginal trail, and four prehistoric rockshelters.	High

Table 3.6 Continued

Polygon Number	Location	Known Sites	Cultural Resource Sensitivity Class
179	West and adjacent to the Helendale Auxiliary Airport	Twenty-eight recorded prehistoric sites, including eight isolated lithic artifacts, seventeen lithic workshops, and three quarries.	Very high
180	Southeast portion of the Iron Mountains, across the Mojave River from Hodge and Johnston's Corner	Sixteen recorded prehistoric sites, including four lithic scatters, two isolated artifacts, one cairn, three quarries, five temporary camps, and one group of rock rings.	High
181	Along north bank of Mojave River, two miles west of Lenwood Road	One large village dating to the protohistoric-Spanish period, possibly the site of the Rancheria of Sisugina.	High
182	Southern bank of the Mojave River, between Grandview and Johnston's Corner	One known prehistoric site, actually a string of temporary camps.	High
183	Centered around Baxter Ranch bounded generally by the Barstow Road and Interstate 15 (only a small portion is in the project area)	At least 35 known sites in polygon, consisting predominantly of lithic scatters and rock ring sites and some secondary quarry areas.	High
195	Point of Rocks, northeast of Helendale	None, although a stage station along the Mojave trail exists in the polygon.	High
196	Western bank of the Mojave River, between Helendale and George Air Force Base	Nine recorded prehistoric sites, including one village, two temporary camps, two lithic scatters, one petroglyph, and three sites of unknown type.	High
197	Silver and Quartzite Mountains, northeast of Oro Grande	No recorded sites; however, four historic mines exist in the polygon as well as other mining features throughout the polygon.	High

Americans, when asked about potentially sensitive areas or issues in the western Mojave Desert, have expressed concerns for archaeological sites, especially human burials and petroglyphs, traditionally used plants and animals, and other sacred areas, such as mountains.

3.4.3 RECREATION AND PUBLIC ACCESS

The El Mirage Dry Lake area is excluded from the LTA Project Area as a special management area, and is not discussed.

Recreational activities in the LTA Project Area can be divided into two broad categories: motorized and non-motorized. Activities can also be divided into structured (e.g., clubs and organizations) and independent (e.g., individual or family) activities.

Camping is generally associated with all uses and 90 to 99% of all recreation use is associated with holidays and weekends. Approximately 500,000 visitor use days occur on public lands in the project area annually.

3.4.3.1 Motorized Activities

Within the CDCA, three types of use designations are applied to manage motor vehicle use in specific areas. These designations are: 1) Open areas where there are generally minimal restrictions on the use of motor vehicles off established motor vehicle routes; 2) Limited areas where motor vehicle uses are generally restricted to designated established routes; and 3) Closed areas where motor vehicle uses are generally not permitted.

Additionally, when locally sensitive resources have been identified, off-road or off-way parking may be limited to designated areas in Multiple Use Classes L, M, and I, or in appropriate ACECs.

Complete implementation of all motorized vehicle use designations will be accomplished to conform with 43 CFR Part 8340.

3.4.3.2 Motorized Activities (Structured)

Within the LTA Project Area, various four-wheel drive, ATV (All Terrain Vehicles), and motorcycle organizations use existing opportunities. Activity opportunities range from organized events to casual get-togethers.

3.4.3.3 Motorized Activities (Independent)

Individuals, families, and others not associated with a formal group also make use of the project area for its recreational use opportunities.

3.4.3.4 Non-Motorized Activities

Non-motorized activities include all aspects of recreation which do not entail use of a motorized vehicle as a principal and necessary part of the activity. Use of motor homes, campers, pickup trucks and cars to

travel to an area for participation is an activity not considered motorized recreation in this document.

Principal non-motorized recreational activities include: 1) Rockhounding - Black Mountain and Opal Mountain; 2) Camping - Owl Canyon; 3) Land sailing - Harper Dry Lake, Superior Dry Lakes; 4) Sightseeing - near Black Canyon, Rainbow Basin, and Inscription Canyon; 5) Shooting and hunting - areawide; and 6) Nature study - including geology, amateur astronomy, wildlife and flower observation. Other recreation uses in the project area include: photography, painting, hiking, mountain bicycling, and model airplane and rocket flight. The LTA Project Area includes the Calico National Recreation Lands.

3.4.4 VISUAL AND AESTHETIC RESOURCES

The Mojave Desert contains a wide variety of scenic values. The Mojave, smallest of the North American deserts, contains geologic features ranging from playas to mountains, and botanical features ranging from tiny flowering plants to ancient Joshua trees.

Across the LTA Project Area, varied scenic values provide the traveler and recreationist with a multitude of visual stimuli. A sameness appears to exist across the project area but specific locations provide spectacular site-specific attractions. One of the aesthetic qualities provided by deserts in general and portions of the LTA Project Area in particular is the opportunity for solitude. A principal constituent of recreation use in the project area is sight-seeing, particularly at Inscription Canyon and Rainbow Basin. Additionally, miles of maintained roads and ORV routes provide sightseeing opportunities within the LTA Project Area for motor vehicle users.

All lands managed by BLM in the CDCA have been assigned a visual resource Management Class. Visual Resource Classes serve two purposes: 1) an inventory pool that portrays the relative value of the visual resource, and 2) a management tool that portrays the visual management objectives. There are four classes (I, II, III, IV); visual resource classes II, III, IV are represented within the LTA Project Area. Objectives for these classes are:

Class II Objective: The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

Class III Objective: The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

Class IV Objective: The objective of this class is to provide for management activities which require major modification of the existing characteristic of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

These visual management objectives are applied to all public land within the CDCA. Actions are denied or mitigated during site specific environmental analysis to assure that class objectives are met. The checkerboard pattern of landownership complicates effective and efficient application of visual resource management. Quality scenic values on public lands may be degraded by development or use on adjacent nonpublic lands.

3.4.5 NOISE FACTORS

The noise environment within the LTA is determined primarily by the military aircraft which operate routinely within the Military Operating Areas (MOAs) and Airspace Corridors which cover large portions of the LTA Project Area. The majority of these aircraft are stationed at either Edwards AFB, near Lancaster, or George AFB, near Victorville, both of which are located within the LTA Project Area. On occasion, transient military aircraft relocate to either Edwards or George in order to use the testing and training assets of these facilities. Secondary contributors to the noise environment include the commercial and private aircraft which fly in the airspace above the LTA Project Area.

The constituents of the noise environment are the subsonic noise associated with normal aircraft flight, and sonic boom noise associated with supersonic flight. Since aircraft noise is not a constant factor, but instead varies as a function of aircraft type, flight profile, the number of aircraft, frequency of flights, and atmospheric conditions, numerous measures have been developed to describe quantitatively the noise associated with aircraft operations. These measures all deal with estimating the sound exposure levels (SEL's) and are mathematically weighted to account for perception differences associated with spectral and tonal content (A-weighted) and impulse content (C-weighted).

The two principal measures in current use are the Day-Night Average Sound Level, LDN (for subsonic noise), and the C-weighted Day-Night Average Sound Level, CLDN (for supersonic noise). For both of these measures, values less than 55 to 60 dB are considered to be acceptable to the community at large in that such levels do not generally elicit an annoyance response. When these levels exceed 65 dB, widespread complaints can be expected along with threats of lawsuits. In order to facilitate land use planning, noise contours are generally developed to describe the regions subjected to noise levels at 65 dB and above.

The mission of Edwards AFB is to support the Air Force Flight Test Center, and, as a consequence, a wide variety of aircraft types operate from Edwards. These aircraft types range from small single engine aircraft

to large supersonic bombers and experimental aircraft. These aircraft operate throughout virtually every flight regime ranging from a few feet above the surface to above 80,000 feet and at speeds from less than 100 knots to several times the speed of sound. The activities at Edwards are of a continuing nature and are not anticipated to diminish in the foreseeable future. The noise associated with the flight testing and training activities conducted at Edwards has been studied extensively, and the area and level of impact have been described in detail. The noise environment within the LTA Project Area due to Edwards AFB flight operations is shown in Figure 3.2.

The mission of George AFB is to support the activities of the 831st Air Division under which are the 37th Tactical Fighter Wing and the 35th Tactical Training Wing. The noise associated with the operation of these aircraft is limited principally to the immediate vicinity of George AFB and is generated from the aircraft take-offs, landings, ingress and egress flights, and ground engine run-ups. These activities are not expected to diminish in the foreseeable future. The noise environment within the LTA Project Area due to George AFB operations is shown in Figure 3.2.

Additional noise factors such as motorcycles are generally not measurable except in highly localized environments and are not considered here.

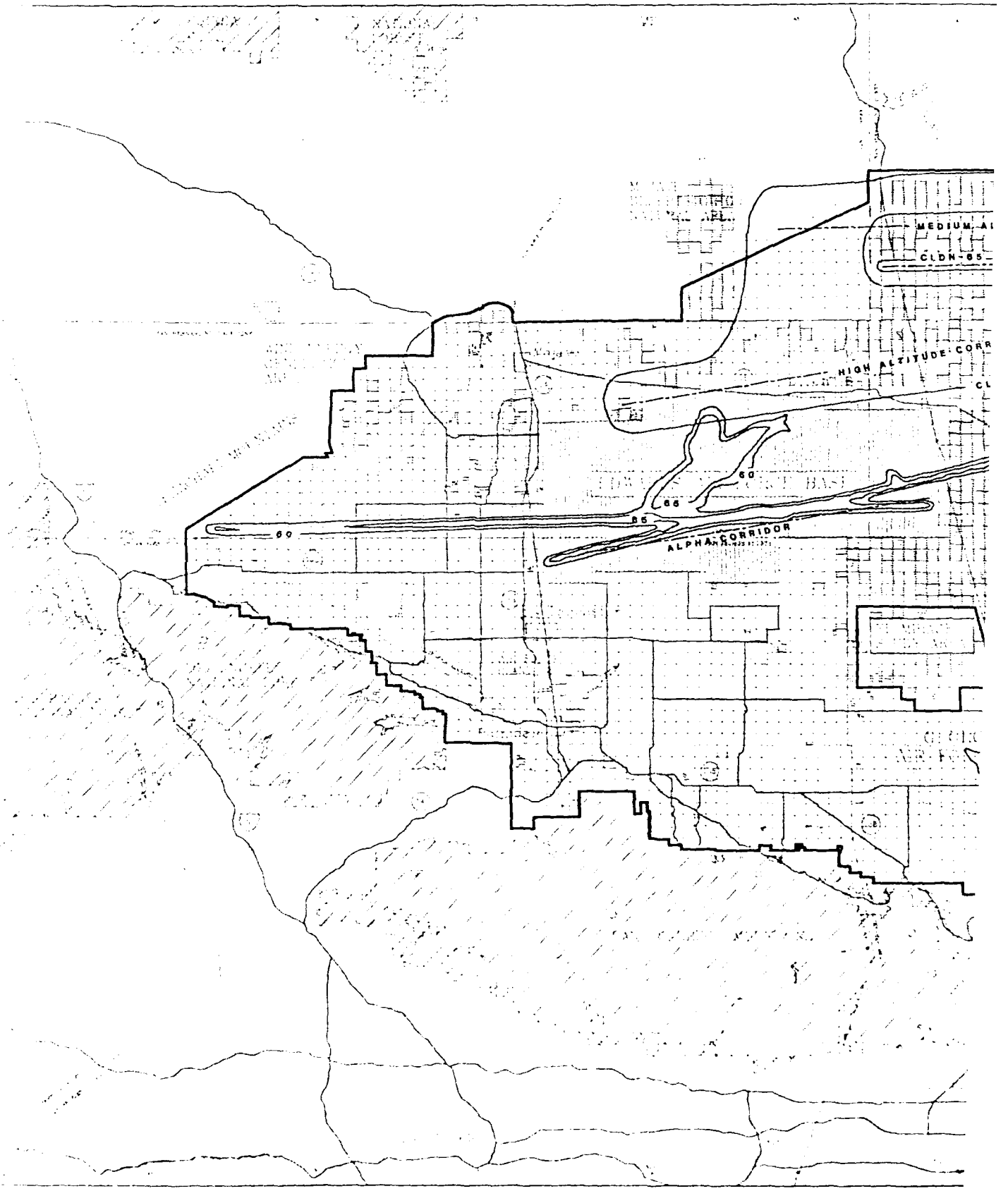
3.4.6 SOCIOECONOMIC FACTORS

Economic growth in the Barstow-Lancaster-Mojave-Victorville areas are also stimulated by the availability of adequate supplies of mineral materials for business and residential construction. In addition, cement operations in the Lucerne Valley-Victorville areas were the main impetus for early population growth in the Victor Valley. Mineral development plays an important role in providing jobs and materials to sustain growth in the local areas described above.

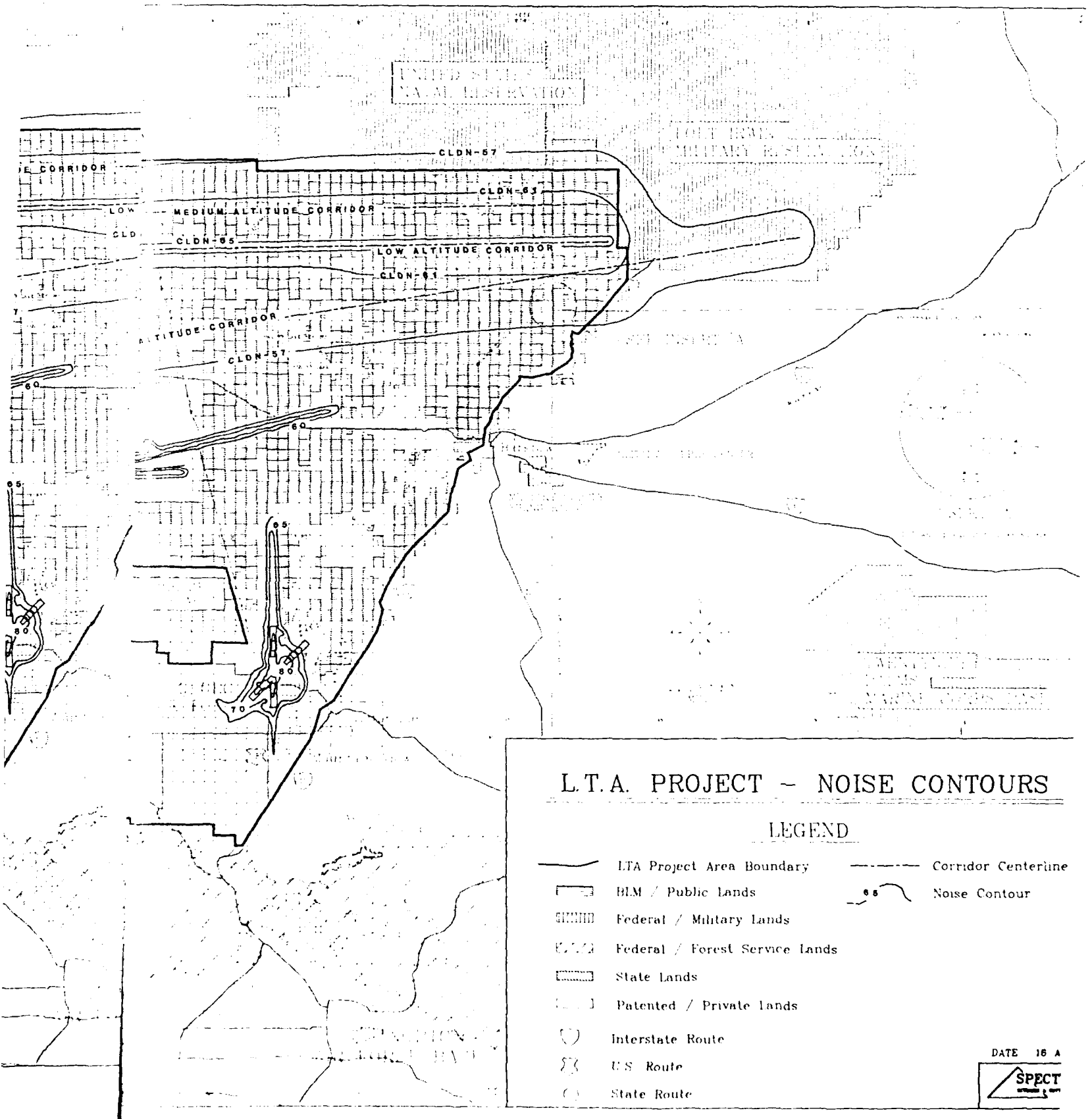
The LTA Project Area contains three primary population centers (Barstow/Daggett, Victorville, and Lancaster/Palmdale), several secondary population centers (Lenwood, Hodge, Helendale, Silver Lakes, Hinkley, Oro Grande, and Adelanto), and one major tertiary population center (San Bernardino).

The population centers in the LTA Project Area are almost exclusively service oriented socioeconomic zones that supply immediate localized services. The potential for large scale development, with or without the proposed land transfers, is not immediate. Prior claims for scarce water resources elsewhere in southern California render the probability of major agricultural production in the impact area unlikely. Extractive industry in the impact area is neither capital intensive nor labor intensive, and any advantages that may accrue as a result of consolidation of adjacent private holdings should have little spillover effect on the local economy.

Population growth in the LTA Project Area has varied from minor to moderate and reflects a geographical distribution which indicates that the



LTA REVISION 2 Figure 3.2 LTA Project Area - Noise Environment



L.T.A. PROJECT – NOISE CONTOURS

LEGEND

- LTA Project Area Boundary
- Corridor Centerline
- BLM / Public Lands
- 65 Noise Contour
- Federal / Military Lands
- Federal / Forest Service Lands
- State Lands
- Patented / Private Lands
- Interstate Route
- U.S. Route
- State Route

DATE 16 A

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primary source of inmigration has resulted from tertiary development of the San Bernardino-Riverside-Ontario metropolitan area. Major evidence of the preponderate influence of spillover from metropolitan growth as the primary source of population change is reflected by relative growth rates between that part of the LTA Project Area which is immediately adjacent to the San Bernardino-Riverside-Ontario metropolitan area, and that part of the LTA Project Area which is least adjacent to the metropolitan center. The growth rate for Barstow, the area of the LTA Project Area least adjacent to the metropolitan center, was only 3.0% (0.6% for the Barstow Regional Statistical Area) for the most recent decennial measurement, while the growth rate for Victorville, most immediately adjacent to the metropolitan center, was 51.1% (69.3% for the Victorville Regional Statistical Area) for the same decennial period (San Bernardino County 1986, U.S. Bureau of the Census data).

The western area of the LTA Project Area around Antelope Valley and Fremont Valley received moderate to heavy livestock use from about 1875 to 1900. The earliest known livestock use was cattle in the Antelope Valley and the slopes bordering the Sierra Nevadas, and by sheep migrating from San Joaquin Valley to ranges in western Nevada. Use by sheep is still an important local economic factor with many of the same areas being grazed yearly. Cattle use has also continued with the more important ranges being those skirting the Sierra Nevadas northeast of Tehachapi. Antelope Valley has had extensive settlement and now has little livestock grazing.

The central area, especially that southeast of the Mojave River, received little use until about 1900, primarily due to the lack of permanent water. Sheep grazed the range intermittently before 1900 and cattle grazing was important until recently when sheep have again become the dominant livestock (USDI - BLM, 1980a). Total amount of dollars associated with forage leases, however, is not great ($30,000).

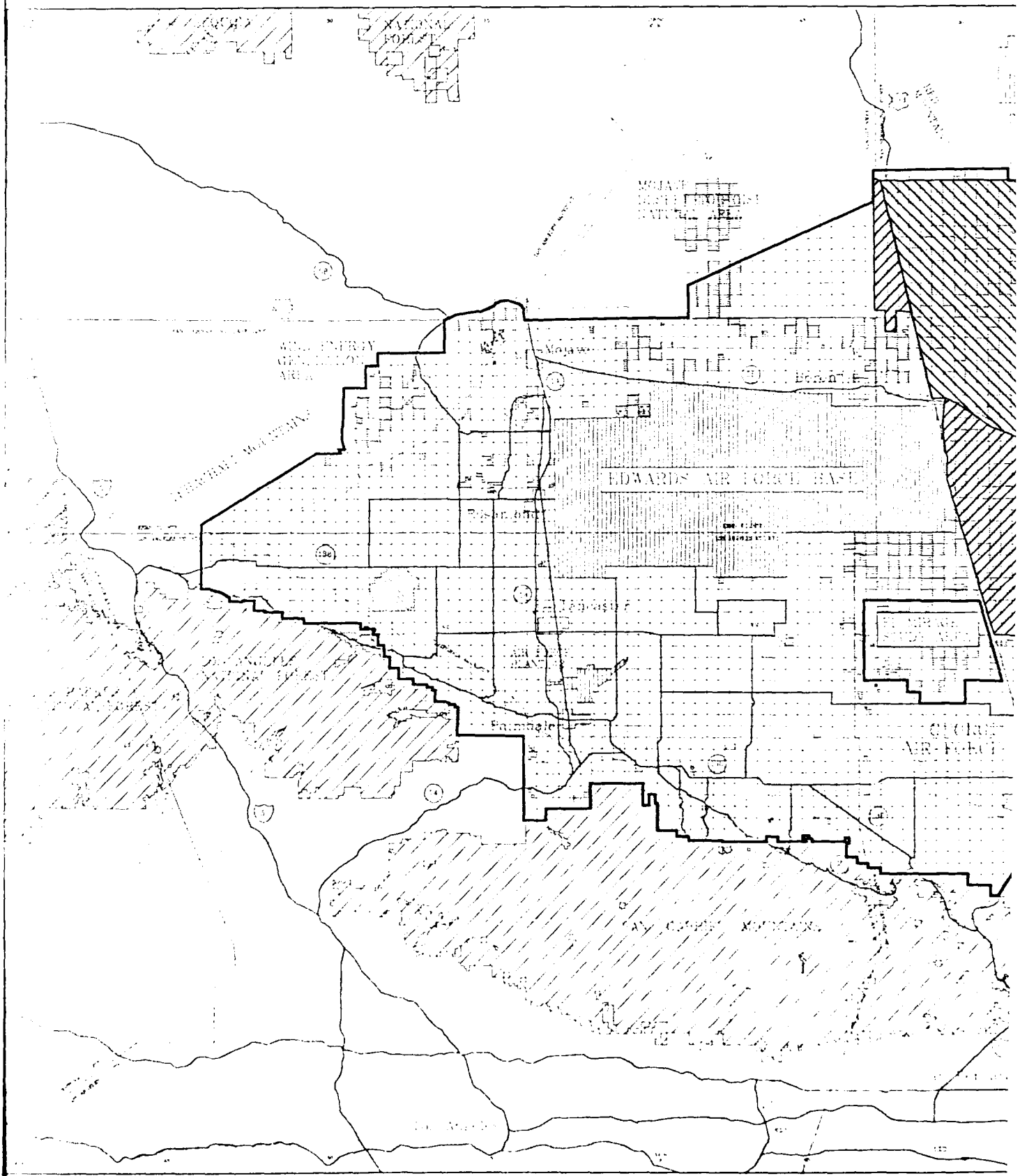
3.5 EXISTING LAND CLASSIFICATIONS AND USES IN THE LTA PROJECT AREA

3.5.1 BUREAU OF LAND MANAGEMENT MULTIPLE USE CLASSIFICATIONS AND SPECIAL DESIGNATIONS

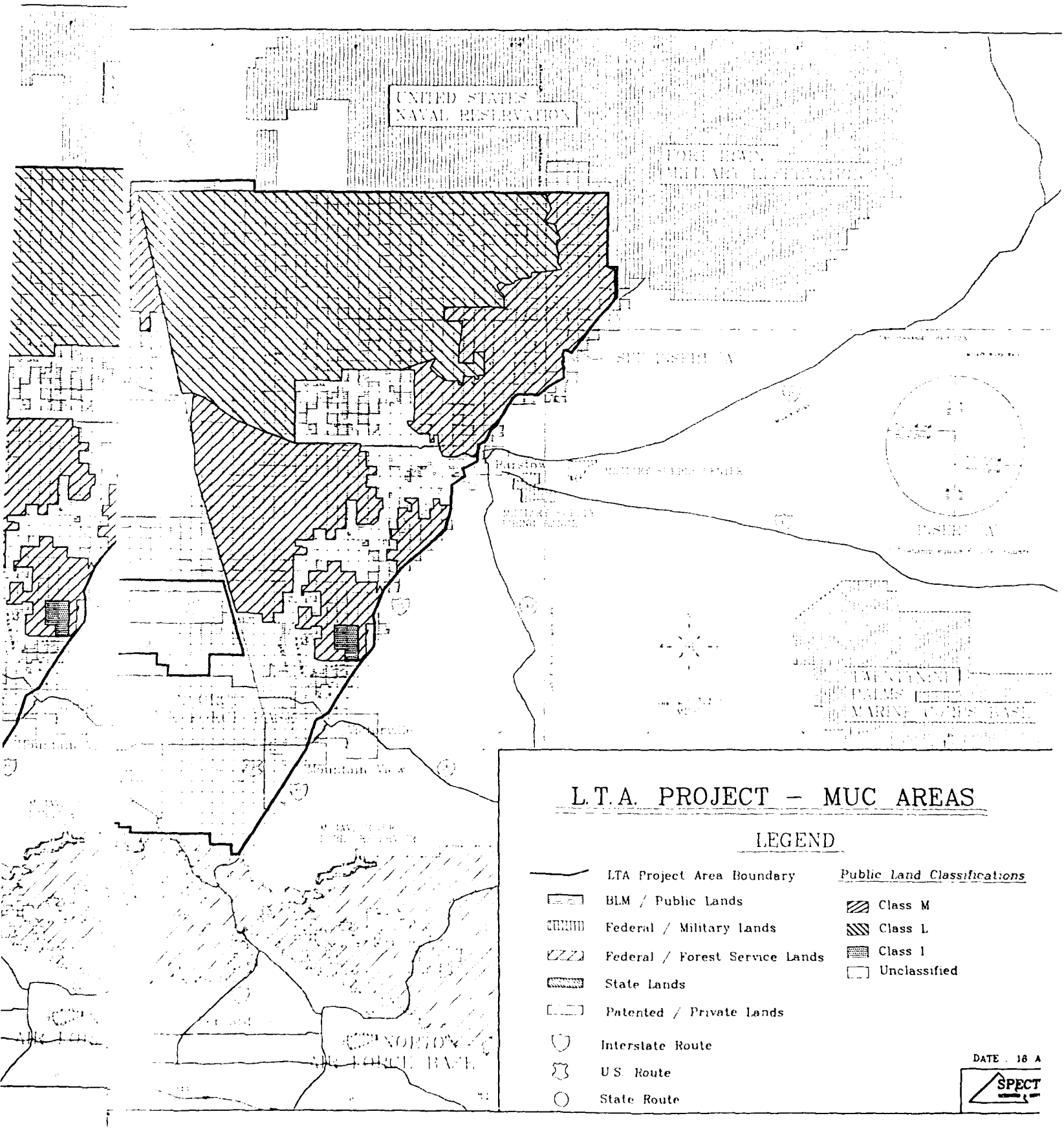
BLM uses Multiple Use Classifications (Fig. 3.3) to denote different types and levels or degrees of use permitted within that particular geographic area (USDI - BLM 1980b). Three classes used for management designation within the LTA Project Area are: Multiple Use Class L, Multiple Use Class M, and Multiple Use Class I. No Multiple Use Class C lands are located in the LTA Project Area. In addition there are some parcels of unclassified lands.

3.5.1.1 Class L - Limited Use

MUC Class L management is oriented toward giving priority protection to sensitive, natural, scenic, ecological, and cultural resources while placing limitations on other uses that may conflict with or degrade these values.



TA REVISION 2 Figure 3.3 Bureau of Land Management Multiple Use Classifications


UNITED STATES
NAVAL RESERVATION
L.T.A. PROJECT – MUC AREAS
LEGEND
LTA Project Area Boundary
BLM / Public Lands
Federal / Military Lands
Federal / Forest Service Lands
State Lands
Patented / Private Lands
Interstate Route
U.S. Route
State Route
Public Land Classifications
Class M
Class L
Class I
Unclassified
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3.5.1.2 Class M - Moderate Use

This class provides for a wide variety of present and future uses under the principles of multiple use and sustained yield of renewable resources. It provides for tradeoffs between uses where conflicts occur, and mitigation of damages caused by permitted uses. Management efforts support what can be termed as "resource use according to the principles of conservation."

3.5.1.3 Class I - Intensive Use

This class is designed to provide use of lands and resources to meet human needs. It permits intensive land uses with reasonable mitigation and protection of sensitive resource values through rehabilitation when necessary.

3.5.1.4 Unclassified Lands

Unclassified lands consist of scattered public land parcels identified as suitable for disposal, and are not placed under a multiple use classification. Unclassified land parcels are managed on a case-by-case basis.

3.5.1.5 Areas of Critical Environmental Concern (ACECs)

Within the framework of BLM regulations (specifically, 43 CFR 1610.7-2), Areas of Critical Environmental Concern can be designated for parcels of public land where special management attention is required. These areas are designed to protect and prevent irreparable damage to important historic, cultural, scenic values, fish and wildlife resources, other natural systems or processes, or to protect life and safety from natural hazards. Establishment of an ACEC must meet both relevance criteria (presence of a significant historic, cultural, scenic value, a fish and wildlife resource, other natural system or process, or natural hazard) and importance criteria by virtue of substantial significance and values, generally of more than local effect.

Within the LTA Project Area are the following ACECs: Black Mountain (No. 35), Eriophyllum (No. 36), Harper Dry Lake (No. 37), Kramer Hills (No. 38), Rainbow Basin (No. 39), and Helendale Cactus (No. 79).

Black Mountain ACEC (CDCA No. 35)

Nominating Discipline/Rationale - Cultural/Native American petroglyphs, trails.

Location: This area, encompassing approximately 6,200 acres, is located in Western San Bernardino County at Black Mountain. The legal description is Sections 10, 12, 14, 22 and 34 of Township (T.)32S, Range (R.)44E., and Sections 6, 8, and 18 of T.32S, R.45E., the south 1/2 of Section 30 and all of Section 32 MDBM.

Resource Description: The area includes one of the largest concentrations of petroglyphs in the California Desert. Management prescriptions for the area are being written with the Management Plan to be completed July 1987.

Eriophyllum ACEC (CDCA No. 36)

Nominating Discipline/ Rationale - Vegetation/Protection of rare plant species.

Location: This ACEC is located just north of Kramer Junction in Section 26, T.11N., R.6W., SBBM in San Bernardino County. It contains 320 acres.

Resource Description: The ACEC was proposed to provide protection for Barstow Wooly Sunflower (Eriophyllum mohavense). This species is a candidate for listing as threatened by the U.S. Fish and Wildlife Service (Federal Register, December 15, 1980). It has been listed on the California Native Plant Society list of Rare and Endangered Vascular Plants as rare and endangered and thus is eligible for state listing (Smith and York, 1984).

Development of the ACEC is based primarily on a need to protect this species from motorized vehicle use and grazing by domestic sheep. The ACEC is located within the Gravel Hills Grazing Allotment, an ephemeral sheep allotment, and is in a Class L (Limited Use) Multiple Use classification. The grazing allotment involves 115,132 acres of public land, of which the ACEC involves less than 0.2 percent (BLM 1982).

The rare (Category 2) plant Eriophyllum mohavense has been described by Jepson (1925), Ferris (1960), and Munz (1974). The plant's geographic range appears to be confined to within a thirty mile radius of Barstow. Approximately 2500 plants distributed over low barren hills in loamy soils have been located in the area of the ACEC by M.D. Henry in 1983.

Another sensitive plant species, spiney chorizanthe (Chorizanthe spinosa), occurs in the ACEC. This species has been listed by the California Native Plant Society but subsequent studies have shown it to be relatively common.

Harper Dry Lake ACEC (CDCA No. 37)

Nominating Discipline/Rationale - Wildlife - Soils/Protection of Marsh Habitat.

Location: This ACEC lies along the southwestern border of Harper Dry Lake in San Bernardino County. It includes 480 acres in T.11N., R.4W., Sections 27 and 28 SBBM. The area is located approximately twenty miles northwest of Barstow.

Resource Description: This ACEC was proposed protect sensitive marsh habitat on BLM administered land utilized by various resident and migratory

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Resource Description: This ACEC was proposed protect sensitive marsh habitat on BLM administered land utilized by various resident and migratory

bird species. The marsh habitat is unique within the Mojave Desert. The ACEC is within a Multiple Use Class L (Limited) area.

The marsh in the ACEC supports a great diversity of bird species. A total of 134 species of birds have been observed in or near the ACEC. Two federally listed wildlife species, Yuma Clapper rail and Bald eagle, have been observed in the area. (USDI - BLM 1982b).

Kramer Hills ACEC (CDCA No. 38)

Nominating Discipline/Rationale - Cultural Resources/Protection of archaeological resources.

Location: This ACEC lies east of the eastern edge of Edwards Air Force Base in San Bernardino County. It includes all of Section 35 and half of Section 26, T.10N., R.6W. for a total of 960 acres.

Resource Description: The ACEC was proposed to protect archaeological resources. The area was regularly used in prehistoric times, particularly for material procurement and manufacturing of stone tools. The ACEC designation for this area is currently being reevaluated.

Rainbow Basin ACEC (CDCA No. 39)

Nominating Discipline/Rationale - Cultural-Recreation-Geology/Unique Geologic-Paleontologic Value

Location: This ACEC is located 10 miles northwest of Barstow in San Bernardino County. The area includes approximately 8,300 acres of public and private lands in T,11N., R.1W., and 2W., SBBM. Approximately 76 percent of this land in the ACEC is public land administered by BLM. An additional 20 percent of the area is owned by Southern Pacific Land Company.

Resource Description: The ACEC was established to protect significant scenic, natural splendor, and scientific study values of national caliber. It is an important field study and research location for earth sciences. Numerous archaeological and paleontological sites exist within the boundaries. The 1972 Public Land Order Withdrawal established Rainbow Basin National Natural Landmark, and a Secretary of the Interior Designation as an Outstanding Natural Area, the same year, reinforced the value of the area for recreation, scenic value, and unique geology.

Wildlife species of special concern in this ACEC include the Mohave ground squirrel and the prairie falcon. The BLM Draft Management Plan for the Rainbow Basin ACEC was completed in 1980 with the Final scheduled for completion in September 1987.

Helendale Scelerocactus ACEC (CDCA No. 79)

Nominating Discipline/Rationale - Botanical/uncommon species of cactus.

Location: This ACEC is located near Helendale, California. It includes 640 acres in the eastern half of Sec 32, T.8N., R.4W., and the western half of Sec 4, T.7N., R.4W., SBBM.

Resource Description: Recommendation of the ACEC is based upon the presence of a population of an unusual form of Scelerocactus polyancistrus (Mojave Fishhook cactus) and desert tortoise habitat. Potentially, other rare desert plant species as well as desert tortoise exist in its area.

3.5.1.6 Wilderness Study Area (WSA)

Only one Wilderness Study Area exists in the LTA Project Area: Black Mountain (CDCA No. 186C). The WSA includes 15,480 acres (8,960 BLM, 5,880 private, and 640 state) in Sections 10, 12, 14, 22, 24,26, 34 and 35 in T.32S., R.44E., MDBM; Sections 19, 20, 28, 30, 31 and 32 of T.32S., R.45E., MDBM; Sections 32, 34 and 35 in T.12N., R.3W., SBBM; and Sections 2, 3 and 4 in T.11N., R3W., SBBM, northwest of Barstow in San Bernardino County.

The Black Mountain WSA was inventoried in 1979 by the BLM and found to meet the criteria established in Section 2 (C) of the Wilderness Act of 1964. The CDCA Plan of 1980 recommended the Black Mountain WSA as non-suitable for designation as wilderness and inclusion into the National Wilderness Preservation System. However, BLM's Interim Management Policy and Guidelines for Land Under Wilderness Review states that a WSA's suitability for designation as wilderness will not be impaired by the time the Secretary of the Interior makes his recommendation regarding suitability to the President and Congress. The uplifted basalt area of Black Mountain provides isolation and outstanding opportunities for solitude, as screening is provided by a series of ridges and canyons across the flow. Recreation opportunities in the WSA include rockhounding and hunting, as well as primitive and unconfined types of recreation.

Within the area known deposits of zeolite, a uranium locality, and jasper veins exist. Potential for deposits of uranium, pumicite, bentonite and magnesite exist.

No unusual plant assemblies or sensitive or significant plant species are known within the WSA. Potential exists for the occurrence of Barstow Woolly Sunflower. A sensitive species of cactus, Sclerocactus polyancistrus, may occur in the WSA as well as Mimulus mohavense, Atriplex spinosa, and Cymopterus deserticola.

Important wildlife species in the WSA include Mohave ground squirrel, desert tortoise, golden eagle and prairie falcon.

The entire area of the WSA is in an area of very high cultural resource values. Various rock art and camp sites with Native American values exist in the area.

No wild horses or burros occur in the WSA. It is partially within the Gravel Hills and Harper Dry Lake Grazing Allotments.

3.5.2 SAN BERNARDINO COUNTY LAND USE CATEGORIES

San Bernardino County defines nine land use categories under four general headings. The four general headings are: Urban Land Use Categories, Rural Land Use Categories, Rural-Conservation Land Use Category, and Mountain-Desert Land Use Map Designations (see Fig. 3.4).

3.5.2.1 Urban Land Use Categories

Residential (Map Designation RES)

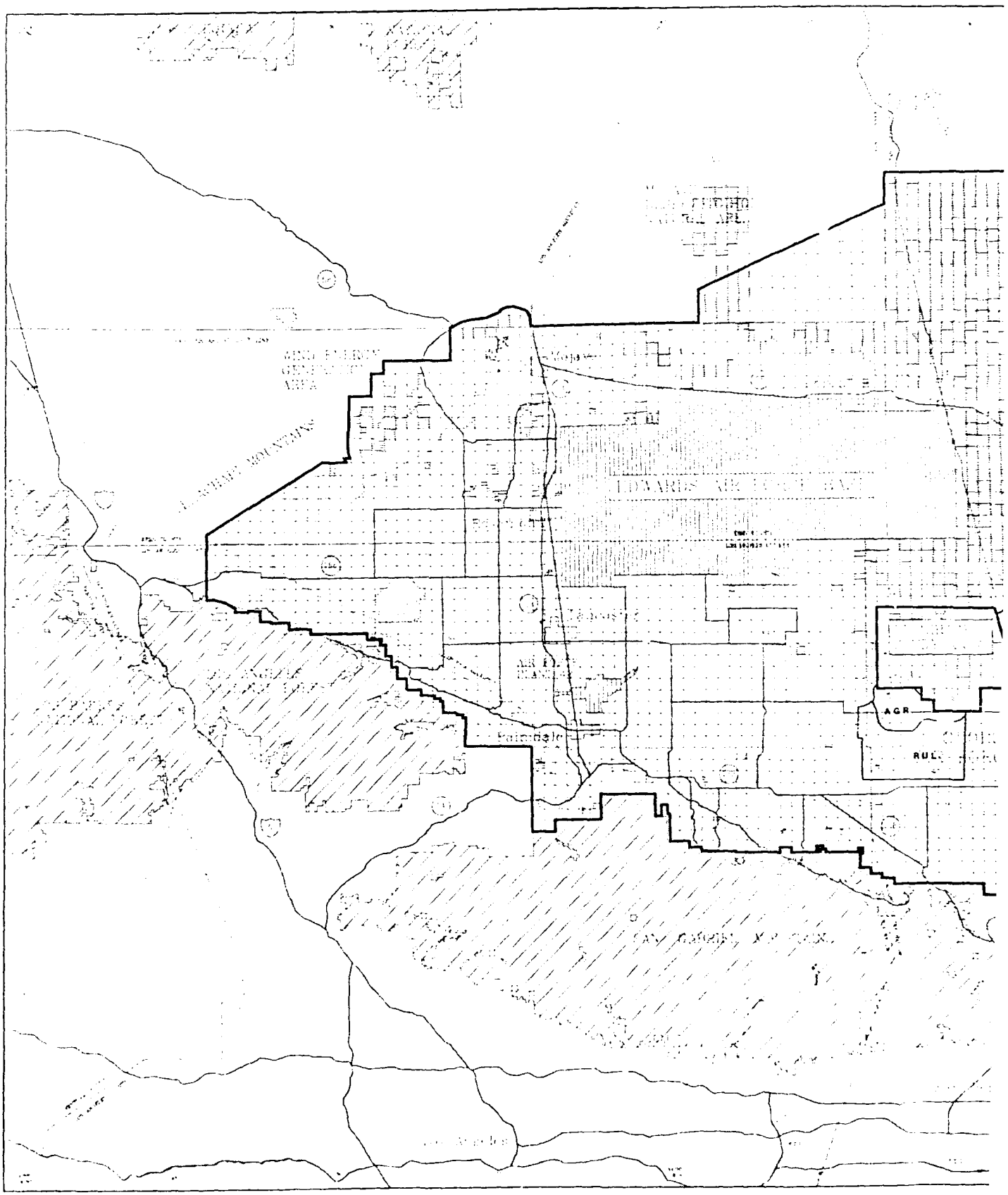
Residential land use allows a full range of urban residential land use densities. Map designations include maximum numbers of dwelling units per acre for each outlined area. Residential neighborhoods within this land use category are generally in lot sizes less than 2.5 acres. While this land use category is generally restrictive for single and multiple residential districts, in some instances the category may also include such supportive non-residential land use as schools, churches, libraries, rest homes, offices, and neighborhood shopping centers. These uses must be for a neighborhood service related purpose. A full range of urban public services (e.g., water, sewers, street systems, fire, police, schools, parks, etc.) are provided where necessary within this residential land use category.

Commercial (Map Designation COM)

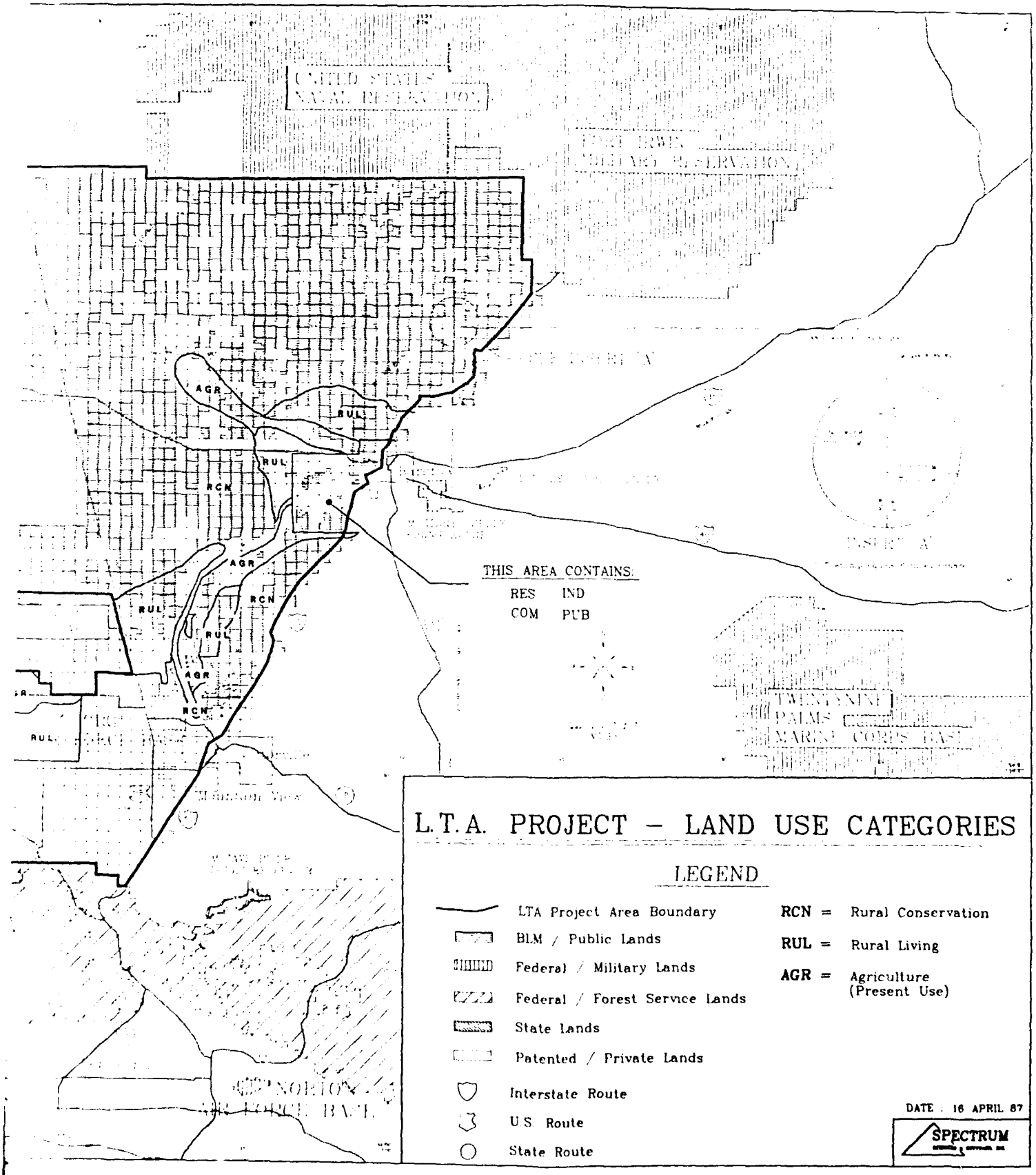
Commercial land use includes all commercial activities that are normally associated with urban areas requiring a wide range of public services. Downtown areas, community centers, highway commercial areas, regional shopping, and specialized centers are examples. Land uses permitted within the limited commercial, general commercial, and service commercial districts in the Community Plans or their equivalent commercial district under the zoning ordinance may be found consistent with this regional map category. This category may also include related light industrial uses and public facilities, provided these uses can function harmoniously within the predominant commercial use.

Industrial (Map Designation IND)

The Industrial category includes all industrial activities which are normally associated with urban areas, requiring many of the essential public services needed for urban areas as well as urban residential and commercial categories. Light assembly plants, electronics firms, industrial parks, storage yards, transportation terminals, basic manufacturing, and salvage yards are examples of uses permitted within this land use category. Within this regional map category, permitted land uses



LTA REVISION 2 Figure 3.4 San Bernardino County Land Use Categories


AGR
RUL
RCN
THIS AREA CONTAINS:
RES IND
COM PUB
L.T.A. PROJECT – LAND USE CATEGORIES
LEGEND
LTA Project Area Boundary
BLM / Public Lands
Federal / Military Lands
Federal / Forest Service Lands
State Lands
Patented / Private Lands
Interstate Route
U.S. Route
State Route
RCN = Rural Conservation
RUL = Rural Living
AGR = Agriculture (Present Use)
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include those permitted within the limited industrial and general industrial districts of the Community Plans or their equivalent districts under zoning ordinances. This category may also include related commercial uses and public facilities provided these uses can function in a supportive manner within the predominant industrial use. Pockets of existing residential use are shown on the existing San Bernardino land use category maps in the industrial category. It is the intent of the General Plan of San Bernardino County to encourage the transition of these areas to industrial use as soon as possible to improve living conditions and to reduce conflicts existing between industrial and residential land uses.

Public and Quasi-Public (Map Designation PUB)

The Public and Quasi-Public land use category includes a variety of public and privately owned facilities and lands, providing a service to the general public. Civic centers, high schools, regional parks, hospitals, lakes, and defense installations are examples.

3.5.2.2 Rural Land Use Categories

Rural Living (Map Designation RUL)

Rural Living includes a wide variety of rural residential resorts and light agricultural use. Also included are limited public service, commercial, and employment facilities. Small farms and rural subdivisions with parcels of 2.5 acres or greater are examples of the land use authorized within the category. Also found within this category are scattered homes on large acreage and small rural settlements serving agricultural, mining, and travel needs. Selected parcels of one acre may be found consistent with this category. This category may in some instances include supportive, non-residential land uses such as local markets, supply stores, restaurants, and storage yards. Land uses must serve functions related to the maintenance of a rural setting. The limitation of public services and improvements to those which are designed for a rural area, and which can be financially supported by a rural population, is the primary distinguishing feature of this category, separating it from other regional map categories. Services commonly found in urban residential, commercial and industrial categories are therefore very limited within the Rural Living land use category.

Agricultural (Map Designation AGR)

Agricultural categories include a wide variety of agriculturally centered activities. Orchards, row crops, and grazing, as well as dairies, feed yards, calf nurseries, and hog ranches are examples. This category may include supportive, non-agricultural activities such as feed and equipment stores, tractor repair stations, and roadside stands for products primarily grown on site. This category is distinguished from the urban categories by the presence of very limited public services and improvements.

3.5.2.3 Rural Conservation Land Use Category (Map Designation RCN)

Rural Conservation category includes a wide variety of publicly and privately owned land which, due to location, access limitations, natural resources, or scenic qualities, lends itself to uses of very low intensity and limited human habitation. National forest and BLM holdings, camps, wilderness areas, agricultural areas, mining operations, and houses on lots of 40 acres or greater and other private and public activities which preserve the predominant open space character of the category are examples of allowed use. Absence of any public services and improvements associated with urban areas is the primary distinguishing characteristic between this and all other land use categories.

3.5.2.4 Mountain-Desert Land Use Map Designations

Desert Special Service Center

Desert Special Service Centers may be commercial service to travelers along the highway. A Desert Special Service Center may be a convenience center for recreational activities or it may be a self-contained community within a military installation, which provides special services to that resident population. As Community Plans are prepared for these special areas the special designation will be replaced by an appropriate regional land use category.

3.5.2.5 Safety Noise Overlay

Safety Overlay Districts are intended to identify natural or man-made conditions which are a potential threat to the public health and safety and to formulate requirements to mitigate that threat. Districts have been established for significant earthquake ground shaking or liquefaction areas, areas prone to brush fire and flooding, areas prone to high noise levels, and for areas adjacent to airports. This document uses the terminology Safety-Noise Overlay Designation (SNOD) in reference to these districts.

3.5.3 MILITARY TESTING/TRAINING REQUIREMENTS

Two Department of Defense (DoD) installations lie within the LTA Project Area, the Air Force Flight Test Center (AFFTC) at Edwards Air Force Base near Lancaster and George Air Force Base near Victorville and Adelanto. Land involved in the two installations includes approximately 301,000 acres at Edwards Air Force Base and just over 5,000 acres at George Air Force Base.

Edwards Air Force Base, part of Air Force Systems Command, exists primarily to support the AFFTC. AFFTC's mission is to provide for test and evaluation of manned and unmanned aircraft, aerospace vehicles, and weapons systems. Extensive facilities, equipment, instrumentation, and personnel are required for completion of this mission.

Today George AFB is the home of the 831st Air Division, under which are the 37 Tactical Fighter Wing and the 35th Tactical Training Wing. Both wings are flying the F-4 with the 37th flying F4 E/G "Wild Weasels", and the 35th flying F4-E Phantom II. Air Warrior, within the 35th is a program to provide close air support to units at the U.S. Army National Training Center, Ft. Irwin, California. The 27th Tactical Air Support Squadron is a tenant unit flying the OV-10 aircraft, which provides forward air control to fighter aircraft.

Operation of both Edwards and George are critically tied to national defense objectives to provide adequate testing, development, and training of aircraft systems and aircrews.

Currently, checkerboard landownership pattern underlying existing DoD test corridors prevents the most effective management of both ground and airspace resources. Public health and safety consideration dictate that a manageable mechanism be developed to preserve ground resources, protect public health and safety, and allow for continued military testing and training requirements to be completed. As the enemy threat has become more sophisticated and severe, our response has been to develop faster and more sophisticated aircraft and weapon systems. These aircraft operate at speeds both supersonic and subsonic, day or night and at altitudes ranging from very near the ground to over 80,000 feet. A continuing need exists to have safe, economic test corridors in close proximity to both Edwards and George AFB's. The missions of these installations are central to our national security interests.

Protection of ingress and egress corridors is essential to the flying mission of the Air Force. For this reason, encroachment by incompatible land uses in these areas is a major concern.

No military property is involved in the LTA Project. No land will be acquired by DoD or added to a military reservation as a result of the LTA Project.

Several airspace corridors within the LTA Project Area are currently being used by the Air Force to support aircraft test and aircrew training activities (see Fig. 1.3).

The airspace corridor associated with the Precision Impact Range Area (PIRA) at Edwards AFB has a proposed expansion to the south beyond the air base boundaries. This expansion area is required to accommodate aircraft flights into the PIRA for both systems tests and weapon delivery events. Currently, flights into this region require careful coordination and scheduling in order to minimize hazards and to avoid airspace use conflicts. Since aircraft flights are often very close to the ground, intensive or permanent development of the private lands south of the existing PIRA represents a land use that is in conflict with the Air Force mission on the PIRA. Most land uses other than development (e.g., grazing, recreation, agriculture, wildlife habitat) are compatible with the Air Force use of the airspace.

The supersonic/low level flight corridor associated with Edwards Air Force Base is intended to provide an adequate area of unobstructed airspace in which military training and testing exercises can be conducted safely. Aircraft within this corridor fly at levels as low as 50 feet above terrain and travel at speeds in excess of 480 knots (approximately 550 miles per hour). Compatible ground surface activities are therefore limited. Primary considerations within this zone are annoyance, interference with speech communication and sleep, and startle reactions. The area is subject to numerous sonic booms caused by aircraft flying at supersonic speeds.

The ingress corridor into George Air Force Base is the approach corridor for aircraft landing at the base. The Air Force has identified this as a primary use area which is critical to the continued conduct of the mission at George AFB. In that this area has considerable development potential, the Air Force has recommended that the land underneath the corridor be consolidated into public lands. It is essential that this corridor remain clear of obstructions to the maximum extent possible as aircraft are in continual descent attitude from the time they enter the corridor until they touch down on the runway. Four areas have been defined within which the probability of aircraft accidents has resulted in special land use recommendations relating to intensity of use and density of people. A circle with a radius of ten nautical miles around George AFB represents the region within which the majority of all aircraft accidents associated with George AFB have occurred. Within this region, a Clear Zone, an Accident Potential Zone 1, and an Accident Potential Zone 2 area have been designated. The Clear Zone begins at the runway threshold and extends 1500 feet on either side of the runway centerline and outward to a distance of 3000 feet. Accident Potential Zone 1 is 3000 feet wide and extends 5000 feet from the Clear Zone. Accident Potential Zone 2 is 3000 feet by 7000 feet and begins at the end of Accident Potential Zone 1. Height of structures within this corridor (under Federal Aviation regulations) is restricted to less than 150 feet. The fourth zone is an area of 10 nautical mile radius around the base (see Figs. 3.2 and 3.5).

3.5.4 RANGE AND GRAZING RESOURCES

Livestock have grazed the California Desert for over 100 years. The acreage and intensity of livestock use has declined markedly in the 1900s because of land acquisitions into private and public ownership, and due to management considerations of forage potential and competing uses such as recreation and wildlife. Livestock grazing is recognized as a principal use on public lands for food and fiber by the Federal Land Policy and Management Act and the Public Rangeland Improvement Act of 1978. Three range types are recognized in the California Desert Conservation Area (USDI - BLM 1980b): perennial, ephemeral and ephemeral/perennial (Fig. 3.6) Perennial range types have a mixture of shrubs and bunchgrasses with little variation in yearly forage production. On ephemeral range types, annual forbs and grasses are the major forage and production varies widely from year to year. Ephemeral/perennial ranges have a mixture of annual and

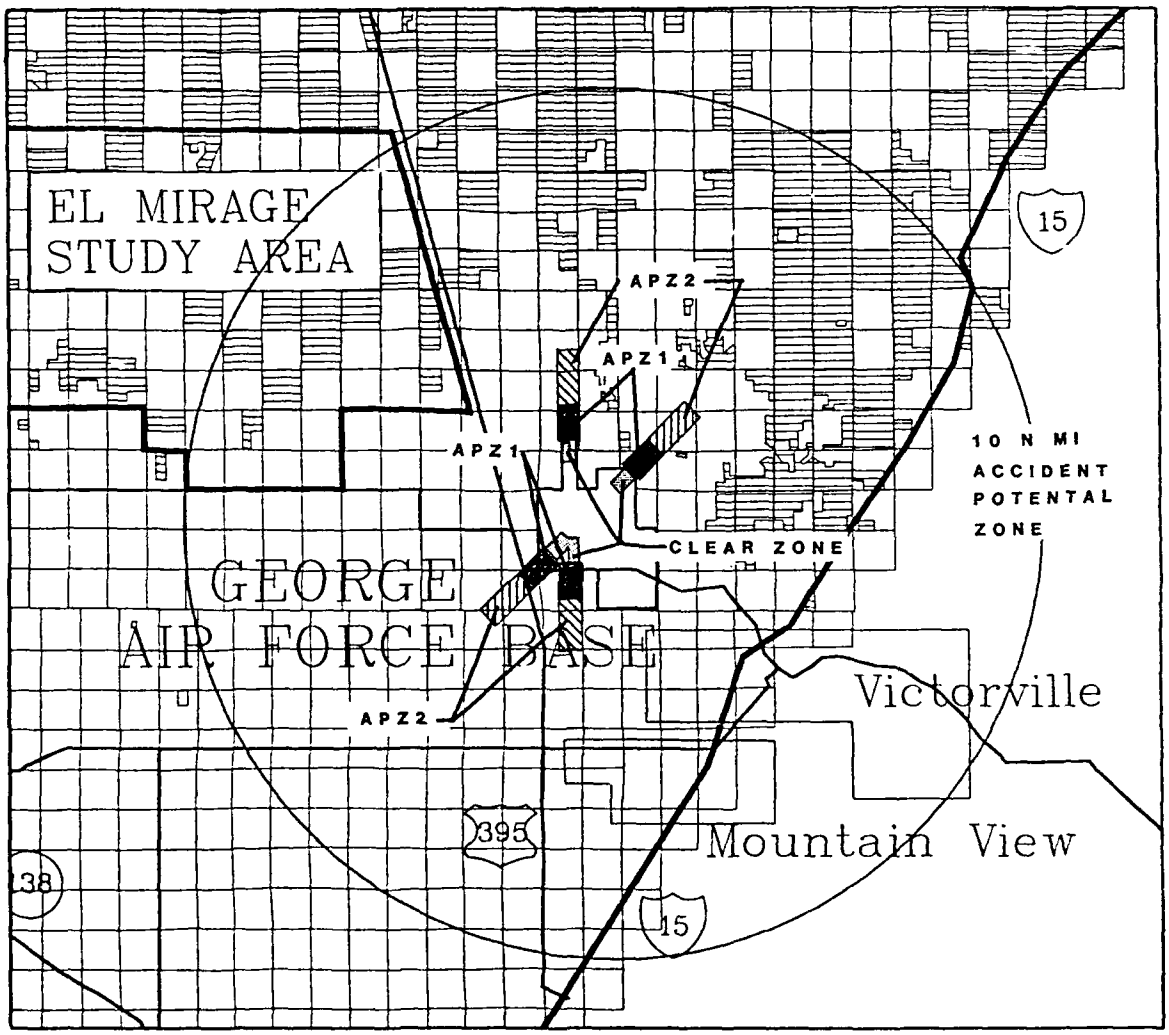

Figure 3.5 George Air Force Base Accident Potential Zone

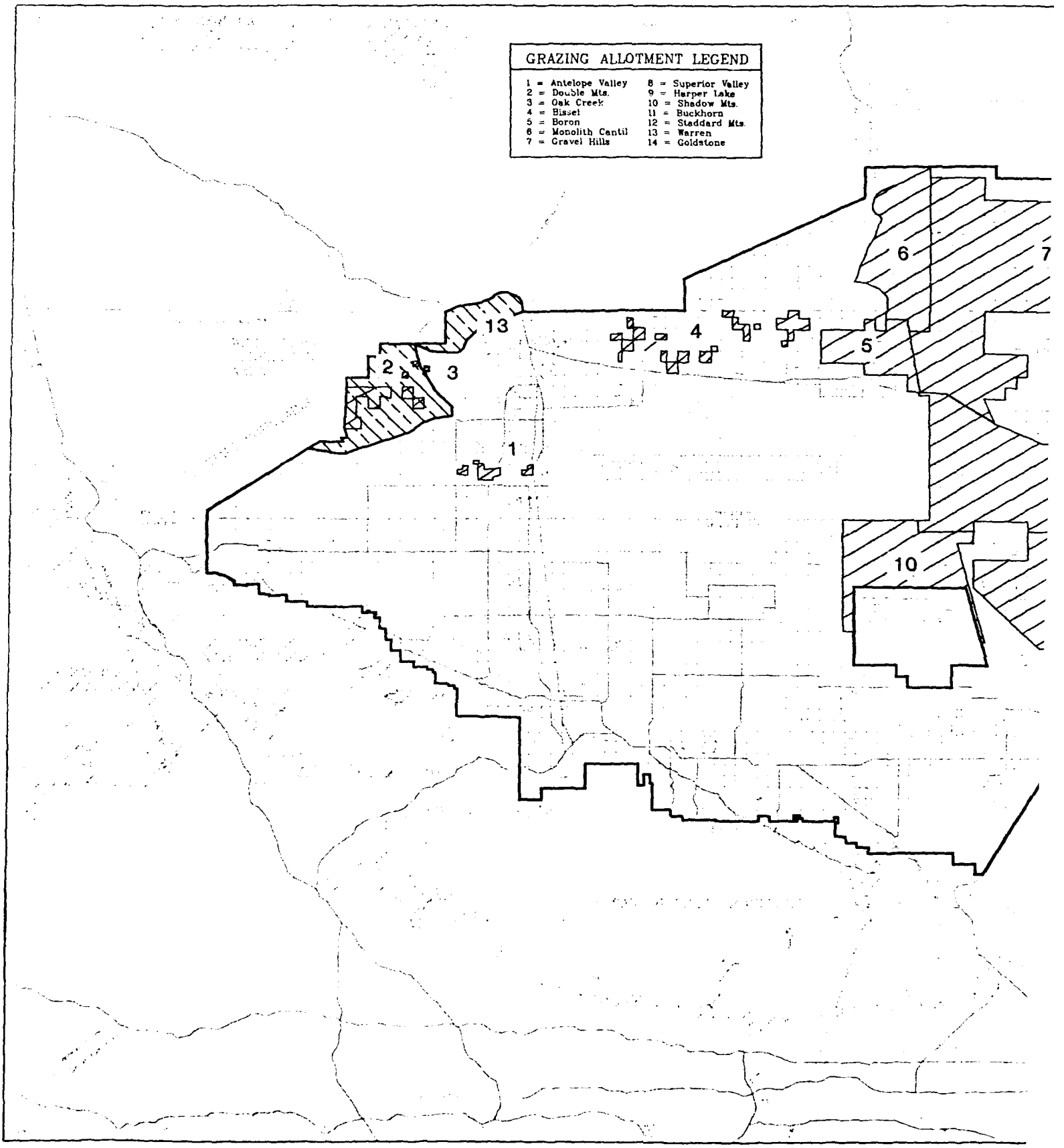

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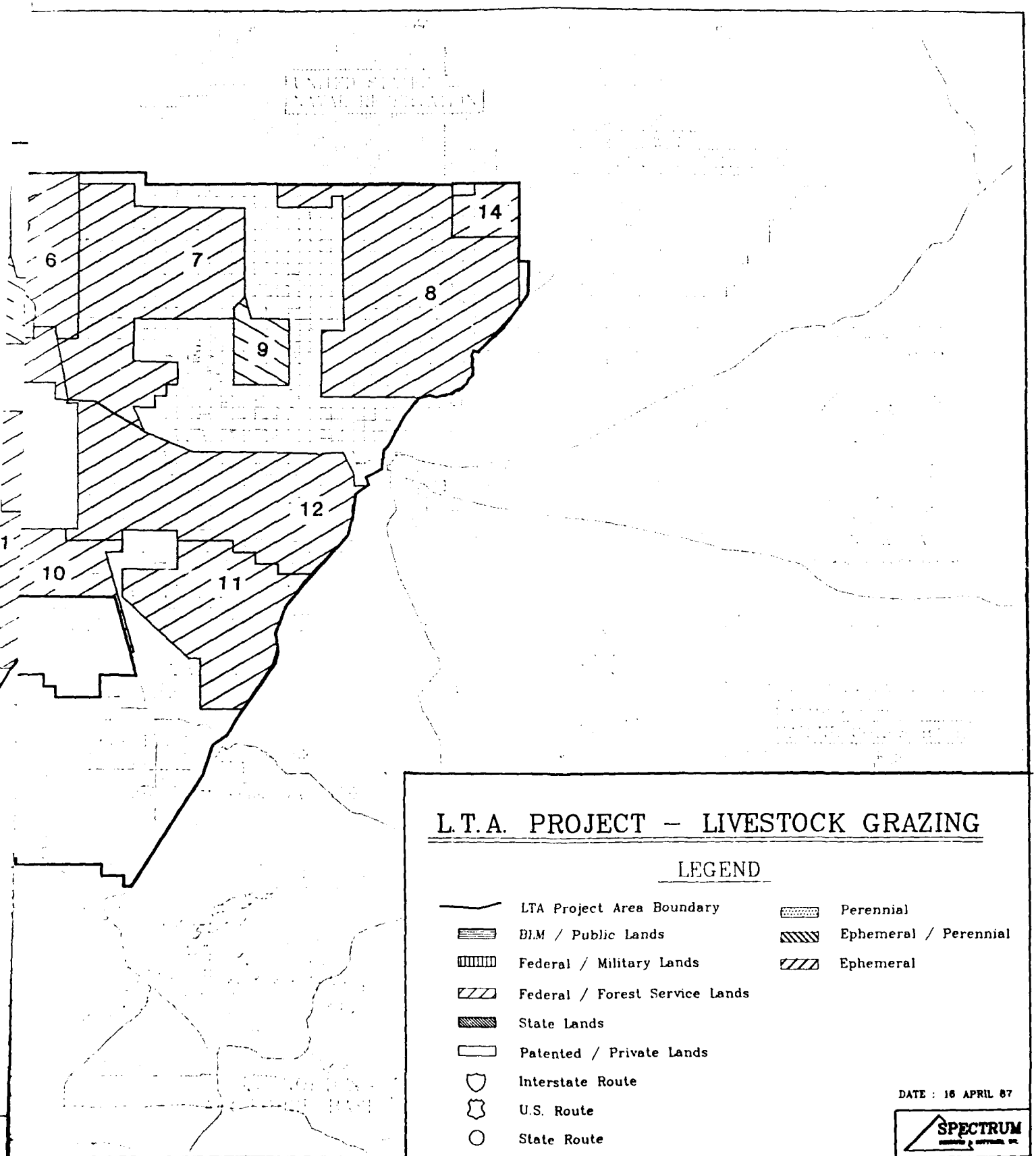
Figure 3.6 Livestock Grazing Allotments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L.T.A. PROJECT – LIVESTOCK GRAZING
LEGEND
LTA Project Area Boundary
BLM / Public Lands
Federal / Military Lands
Federal / Forest Service Lands
State Lands
Patented / Private Lands
Interstate Route
U.S. Route
State Route
Perennial
Ephemeral / Perennial
Ephemeral
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perennial shrubs, forbs and grasses and less variation in yearly forage production.

Sheep grazing is the dominant use effected by the LTA Project (11 sheep and 3 cattle lease/permits). A basic sheep operation places ewes and lambs in the LTA Project Area during the spring when quality of the forage is nutritious. The sheep are then shipped to the summer range. The lambs are shipped to market during the summer. The ewes are shipped back to California during the fall, where they are lambed and sheared. The ewes and lambs remain on private pastures until the spring. There are two types of cattle use which occur in the LTA Project Area: cow/calf and steer operations. Both of operations use the LTA Project Area year round.

3.5.4.1 Barstow Resource Area

In the Barstow Resource Area, there are seven grazing allotments within the LTA Project boundary (Table 3.7). There are about 408,900 acres of federal land with about an equal amount of private land and a few sections of state land in the allotments. About 11,000 AUMs of forage are harvested by livestock from the public lands. Cattle graze on one allotment (Harper Dry Lake) and sheep graze, primarily in the spring, on the other six allotments (Superior Valley, Gravel Mountain, Shadow Mountains, Stoddard Mountain, Goldstone and Buckhorn Canyon). The Harper Dry Lake allotment is classed as an ephemeral/perennial range site while the other six are classed as ephemeral range sites. Vegetation of the southwestern, central, and south central Mojave floristic zones are found on the Barstow Resource Area in a generally mixed pattern. The perennial vegetation is usually a shrub-grassland complex with varying degrees of cover. The ephemeral vegetation is composed of annual forbs and grasses whose presence is contingent on rainfall.

Harper Dry Lake Allotment

The Harper Dry Lake allotment is an ephemeral/perennial range type in good condition with a cattle grazing lease for about 600 Animal Unit Month (AUMs). An Allotment Management Plan (AMP) has been completed for this allotment. Historically, grazing by livestock has been a part of this range for more than 100 years. Black Ranch near Harper Lake was on the tax rolls in 1875. The range was being grazed for over 10 years before 1875 and was grazed continuously until the 1930s when drought conditions occurred. Homesteading activities from 1910 to 1915 affected the range resource also (USDI - BLM 1980b).

Buckhorn Canyon Allotment

The Buckhorn Canyon allotment is an ephemeral range site in fair condition, and is grazed by sheep in the spring. The average permit runs about 700 AUMs per season depending on the ephemeral forage production. The range has a history of high livestock use. Most of the livestock use probably has occurred since the early 1900s when stock water was developed (USDI - BLM 1980b).

TABLE 3.7 GRAZING ALLOTMENTS ON THE LTA PROJECT AREA

ALLOTMENT	LANDOWNERSHIP[1] ACRES			LIVESTOCK[2]	CLASS	RANGE[3]	MAP INDEX NUMBER
	Federal (1000s)	State (1000s)	Private (1000s)	AUMs	LIVESTOCK	TYPE	
Harper Dry Lake	16.1	-	3.8	600	Cattle	Eph/Per	9
Superior Valley	131.8 (167.6)[4]	1.9	45.8	2247	Sheep	Eph	8
Gravel Hills	115.1	-	102.4	2698	Sheep	Eph	7
Shadow Mountain	36.5	-	11.8	2557	Sheep	Eph	10
Stoddard Mountain	87.7 (157.6)	0.32	21.4	1645	Sheep	Eph	12
Goldstone	2.6 (3.0)			572	Sheep	Eph	14
Buckhorn Canyon	12.8	-	2.6	702	Sheep	Eph	11
Monolith Cantil	19.2	-	26.6	200	Sheep	Eph	6
Boron Sheep	11.4	-	27.5	157	Sheep	Eph	5
Bissel	4	-	?	308	Sheep	Eph	4
Oak Creek	0.16	-	?	16	Cattle	Per	3
Warren	0.58	-	?	55	Sheep	Per	13
Antelope Valley	6.5	-	?	529	Sheep	Eph	1
Double Mountain	0.58	-	?	32	Cattle	Per	2

[1] Acres are approximate based on allotments mapped on 1:250,000 map and USDI - BLM report (1980a).
[2] AUM - Animal unit month for the public land. These AUMs are based on 5 year averages but have large fluctuation depending on the ephemeral vegetation.
[3] Eph - Ephemeral; Per - Perennial
[4] Total acreage in allotment, including area outside LTA

Gravel Hills Allotment

The Gravel Hills allotment is classified as an ephemeral range type in good condition. Sheep graze primarily in the spring from about March to May depending on the ephemeral forage production. An AMP has been completed for this allotment. The average grazing permit is about 2,700 AUMs of ephemeral forage. This range lays between Fremont Valley and Harper Valley. Both valleys have had extensive livestock grazing since settlement. Sheep probably grazed in this area as early as 1860. Large cattle ranches were reported in both areas in the early 1900s (USDI - BLM 1980b).

Superior Valley Allotment

The Superior Valley allotment is an ephemeral range site in good condition. Sheep graze this allotment in the spring season from about March to May. Stocking rates average about 2,250 AUMs with large fluctuations possible because of the ephemeral forage production (USDI-BLM 1980b). Historically, cattle and sheep have been on this range for over 100 years. This range was part of the Black Ranch near Harper Lake which at one time supported 2,000 cattle.

Shadow Mountain Allotment

The Shadow Mountain allotment is an ephemeral range type in fair condition with a downward trend. About 2,500 AUMs of sheep use this allotment in the spring. This range has been grazed for at least the past 20 years and possibly longer, but there are no records.

Stoddard Mountain Allotment

The Stoddard Mountain allotment is an ephemeral range site in good condition. There was probably little use of the range east of Highway 15 within the LTA Project Area until the 1940s when a ranch was located in Stoddard Valley. On the range west of Highway 15, known livestock use has occurred for at least the past 20 years and probably longer. Presently sheep graze this entire range, in good ephemeral production years, in the spring season. About 1,650 AUMs is the average range use permitted on the entire allotment of which the portion in the project area is about half (USDI - BLM 1980b). An AMP has been completed for this allotment.

Goldstone Allotment

The Goldstone allotment is an ephemeral range site in good condition. Sheep use this allotment in the spring at about 570 AUMs. This range has been grazed for at least the last 20 years. The historic use is undocumented.

3.5.4.2 Ridgecrest Resource Area

In the Ridgecrest Resource Area, there are seven grazing allotments within the LTA Project boundary (Table 3.7) but only about 39,603 acres of federal land with much more private land and a few sections of state land. About 1,300 AUMs of forage are harvested by livestock from the public lands. Cattle graze on the Oak Creek and Double Mountain allotments and sheep graze on the other six allotments. Three allotments: Oak Creek, Double Mountain and Warren, are perennial range types while the rest are ephemeral range types. Most of the vegetation on the Ridgecrest Resource Area is in the southwest Mojave floristic zone. The perennial vegetation is a Joshua tree-woodland complex with Joshua trees and needlegrass (Stipa speciosa) grass being prominent. Ephemeral vegetation is composed of annual forbs and grasses in an on-again, off-again pattern that is contingent on the rainfall. Forage production for livestock can range from near zero to over 3,000 pounds per acre (USDI - BLM 1980b).

Antelope Valley Allotment

The Antelope Valley allotment is an ephemeral range site in fair condition. It is composed of scattered parcels surrounded by private land. It supports ephemeral sheep grazing in the spring. There is a lease for about 500 AUMs. Sheep migrated through Antelope Valley to ranges in western Nevada as early as 1860. In the western Mojave, the earliest known livestock use was by cattle and sheep in Antelope Valley. It was used for winter and spring forage. Thompson (1929) visited Antelope Valley in 1918-1922 and found that the central part of the valley was devoted principally to cattle raising. Settlement of the valley since 1900 has markedly reduced livestock grazing in the valley (USDI-BLM 1980).

Monolith Cantil Allotment

The Monolith Cantil allotment is an ephemeral range site in good condition with a stable trend. The allotment is completely fenced and was used for cattle grazing until 1963. Sheep use this range at an average of about 1,500 AUMs in the spring season depending on ephemeral production. This allotment probably has a history of use much like Antelope and Fremont Valleys. Livestock use began in the 1860s and increased until the early 1900s when livestock numbers declined as overstocking and settlement activities began to show their effects (USDI - BLM 1980b). Presently, there are some trespass and off-road vehicle use problems in this area.

Boron Sheep Allotment

The Boron Sheep allotment is an ephemeral range site in good condition with a stable trend. There is a lease for 157 AUMs of forage use by sheep on this range. In the late 1800s, this area was probably grazed by the Black Ranch located near Harper Lake or by ranchers grazing out of the Fremont Valley. Grazing use declined in the 1930s because of drought and the effects of overgrazing (USDI - BLM 1980b).

Bissel Allotment

The Bissel allotment is an ephemeral range allotment in fair condition with a stable trend. About 308 AUMs of sheep use this range in the spring. There are some off-road recreation and trespass problems. This range probably has a history similar to Antelope Valley with heavy livestock grazing in the winter and spring, starting in the 1860s and tapering off since the early 1900s (USDI - BLM 1980b).

Warren, Double Mountain and Oak Creek Allotments

The Warren, Double Mountain, and Oak Creek allotments are perennial range sites with stable trends and in fair condition. Sheep graze the Warren allotment while cattle graze the Oak Creek and Double Mountain allotment. Sheep and cattle grazing started in the 1870s in this area and peaked in the early 1900s (USDI - BLM 1980b). The Warren allotment is within a major historic sheep trail.

3.5.5 GEOLOGY AND MINERALS

Mining and mineral extraction have played a large role in the CDCA in general. In the LTA Project Area, mineral exploration and development has occurred since approximately 1850 (Hill 1980).

Mineral resources on federal land within the CDCA and the LTA Project Area are legally and administratively divided into locatables, leasables, and saleables on public land. Locatable minerals are all metallic minerals and some non-metallic commodities, including uranium, thorium and lithium. Leasables include oil, gas, and geothermal resources, sodium and potassium. Saleables include sand and gravel, stone, and clay. The free world's largest source of borates is near Boron, in the center of the LTA Project Area.

3.5.5.1 Limestone and Dolomite

Limestone and dolomite are present in the Victorville-Oro Grande District of the Mojave and have been mined for over 100 years. Both limestone and dolomite are also found in the Shadow Mountain-Adelonto District and have been quarried since before 1955 (Gray and Bowen, 1980).

3.5.5.2 Gold

Gold is mined throughout the CDCA. In addition, gold has been provided as a by-product of lead, zinc, silver, and copper mining. A principal gold producing area in the LTA Project Area is near Mojave (Clark 1980).

3.5.5.3 Borates

The world's largest known reserves and all of the United States borate production is in California. Borate has been mined in one fashion or another since 1864 in the California Desert. The best known borate mine in the LTA Project Area is at Boron (Carpenter 1980).

3.5.5.4 Sand and Gravel

Sand and gravel deposits are a natural product of the desert environment in the LTA Project Area (Leighton 1980). California is the country's leading producer of sand and gravel (produced in 51 of 58 counties). Unit prices of sand and gravel are low, making it advantageous for users to be near production sites. Important marketing centers for sand and gravel in the LTA Project Area are Antelope Valley and Barstow-Victorville. These deposits are felt to contain sufficient reserves to supply a portion of existing markets for at least the next 25 years.

Deposits of high-grade aggregate occur in relatively few locations; thus material must be imported to many areas such as Victorville and Kramer Junction. The center of Antelope Valley is 25 miles from the Little Rock Creek fan production district. The ready mix concrete plant operated by

Owl Rock Products in Victorville imports its aggregate from the Little Creek fan, 40 miles to the south.

Within the LTA Project Area, San Bernardino County operates four borrow sites for road repair materials (Barstow, Hinkley, Helendale, and Victorville) with a fifth site under application near El Mirage Dry Lake. The savings to the county by operating these sites instead of hauling aggregate from remote areas is estimated at $5,000 per site per year. This does not include the cost that the county would have to pay in royalties to a private owner.

3.5.5.5 Clays

Illitic clay is mined by Pfizer, Inc. from deposits north of Victorville. The clays are used as fillers, ceramic flux, and insecticide carriers. Clays are also mined northeast of Barstow for use as brick clay. California is the country's leading producer of Portland cement.

3.5.5.6 Geothermal Resources

There are no reported geothermal resources in the LTA Project Area.

3.5.5.7 Wind Energy

Wind energy resources have been developed in the Ridgecrest Resource Area of Kern County. Five parcels of BLM administered land have been developed. There are Southern California Sunbelt, Oak Creek Energy Systems, Flowind Corporation (two parcels), and Windsource. All sites are in T.12N., R.13W., SBBM or T.32S., R.35E., MDBM, northwest of Mojave. This area is rated "excellent" by the California Energy Commission (1986).

Wind energy has already made a substantial impact on the California energy market, generating 14 percent of all new electric capacity additions between 1982 and 1986 (California Energy Commission 1986).

3.5.6 UTILITY CORRIDORS AND ACCESS

The goal for utility corridors expressed in the California Desert Conservation Area Plan was "to establish a network of joint-use planning corridors capable of meeting projected utility service needs to the year 2000" (USDI - BLM 1980b). Planning corridors are used for "guiding the necessary detailed planning and environmental assessment work which will continue to be required when a right-of-way is requested." Types of facilities included in the utility corridors are electrical cables over 161 kV and their towers, pipelines over 12 inch diameter, coaxial cables for interstate communications, and major interbasin canals and aqueducts.

Eight planning corridors have been identified in the LTA Project Area (Table 3.8). Presently, six electrical powerlines and two pipelines exist in these corridors. Additionally, three contingent corridors have been

TABLE 3.8. UTILITY CORRIDORS WITHIN THE LTA

Planned Corridor	Width	Existing Facilities	Miles[1] in LTA Federal	Private
A	2 mi	230-kV and 800-dc powerlines		30
B	2 mi	2/ 230-kV powerlines		42
C	2 mi	500-kV powerline		49
D	2 mi	2/ 287-kV and 500-kV powerlines	2	22
G	2 mi	30-in pipeline	39	50
O	2 mi	12-in pipeline	6	30
P[2]	2 mi	2/220kV powerline, 12 in pipe	15.5	25
Q[3]	5 mi	Coaxial cable	17.8	21.5
Contingent Corridor				
P[4]	2 mi	2/ 220-kV powerline, 12 in pipe line and coaxial cable	10	11
Q[5]	5 mi	Coaxial cable	6.6	35.7
AA	4 mi	2/ 500 kV powerlines		30

[1] Mileages are approximate

[2] South of Kramer Junction

[3] East of Kramer Junction

[4] North of Kramer Junction

[5] West of Kramer Junction

identified for possible use. These contingent corridors would need approval under the Plan Amendment process as outlined in the California Desert Plan. Presently, there are electrical power lines, coaxial cables, and a pipeline existing within these corridors.

In 1980, about 5,000 Mv of electrical power for southern California crossed or bordered the LTA Project Area. By the year 2000, it is estimated that 20,000 Mv could be transferred across the desert. The proposed McCullough-Victorville 500 Kv transmission line has been approved and will soon be built through this area. Restrictions on coastal construction of power plants and air-quality issues in the Los Angeles basin account for this estimate. Proposals for piping natural gas into California from Utah and Texas to extract oil more cleanly are being planned because of these restrictions. The BLM management plan is to encourage the use of designated corridors for utility rights-of-way.

One possible conflict with an existing utility corridor (Q corridor) may exist at the most southern boundary of the supersonic/low level flight corridor. The height of the towers versus the low level of the aircraft is a potential problem.

4. ENVIRONMENTAL CONSEQUENCES

4.0 INTRODUCTION

The following pages describe the effects of implementing each of the six alternatives. Each alternative discussed below is addressed with respect to resources of concern under the major topics of physical environment, biological environment, human environment, and land uses and patterns. The four identified issues (landownership patterns, multiple use classifications, land use categories, and public health and safety) are incorporated in the presentation of resource values.

4.0.1 RESOURCES NOT IMPACTED BY THE PROJECT

Based on information presented in Chapter 3 - Affected Environment, and a review of all resources of concern, a determination has been made regarding resources to which no impact could be attached. These resources are: Native American values; threatened and endangered plants; utility corridors and access; soils; and noise. These resources are therefore not discussed in the presentation of individual alternatives below. Additional resources may be eliminated from discussion in one or more alternatives. Those resources are identified at the beginning of each alternative discussion.

4.1 ALTERNATIVE I (NO ACTION)

The No Action alternative will result in continuation of existing landownership, management practices, and other existing laws and regulations.

4.1.1 RESOURCES NOT IMPACTED BY THE ALTERNATIVE

Resources eliminated from discussion under Alternative I include: air resources; Native American values; ground and surface water resources; soils; the noise environment; the WSA; and mining mineral access.

4.1.2 PHYSICAL ENVIRONMENT

Paleontological Resources

Paleontological values would continue to be managed under existing guidelines. This management is currently made difficult due to the checkerboard pattern of public/private ownership and the resultant pattern of dispersed small tracts of public lands in the LTA Project Area. This dispersed pattern of landownership results in resource values being spread over blocks of both public and private land, reducing managerial capability to assess, manage or protect specific values in a given area.

4.1.3 BIOLOGICAL ENVIRONMENT

Wildlife Resources

With respect to wildlife, existing landownership patterns present difficulty to both public and private landowners where the pattern of ownership changes every square mile. Continuation of existing ownership patterns will result in continued inability of both public and private landowners to adequately assess, manage and protect wildlife resources on this land (see Section 3.3.2).

Two federally listed species of birds, the bald eagle and the Yuma clapper rail, may exist in the project area. Selection of the No Action alternative will result in continued limited protection and management options with respect to these two species. The Yuma clapper rail is a one-time sighting and the area is not part of its current range.

The Mohave ground squirrel is found throughout the area and would maintain its current population numbers or increase with the present management program. The desert tortoise is now protected and management would remain at the same level or improve as additional information on this species is gathered. The protected area, the Fremont-Stoddard, crucial habitat area, for the desert tortoise occurs within the LTA Project Area (see Fig. 3.1). Table 4.1 lists acreages which would be affected by each alternative. Although the Mohave vole is known only from the riparian habitat along the Mojave River and the west shore of the Harper Dry Lake playa, no additional threat to this species is anticipated with this alternative. All three of these species, however, are subject to adverse impacts under current land management practices. The development of private land holdings in areas utilized for habitat by all three species is presently uncontrolled. Continuation of existing conditions will result in the continued inability of resource managers to apply techniques and procedures (both practical and administrative) to aid in more beneficial management of the wildlife resources within the project area.

Plant Resources

Management for the preservation or enhancement of plants and their habitat is currently limited in effectiveness as a result of the checkerboard landownership pattern. Contiguous areas cannot be effectively managed to reduce piece meal effects of losses of habitat areas.

Based on information presented in Chapter 3 (see Section 3.3.3.3), some loss of sensitive species may result under the No Action alternative due to illegal use, trespass and potential plant rustling. Sensitive plant resources currently protected to some extent by existing management designations (e.g., ACECs), will receive benefit from management of these designated areas. A list of presently documented sensitive species within the LTA Project Area is presented in Table 3.4.

TABLE 4.1 ACREAGES OF CONSOLIDATION, RETENTION, AND DISPOSAL ZONES BY ALTERNATIVE FOR THE DESERT TORTOISE FREMONT-STODDARD CRUCIAL HABITAT AREA

ALTERNATIVE	CONSOLIDATION ZONES (ACRES)	RETENTION ZONES (ACRES)	DISPOSAL ZONES (ACRES)
Alternative I	0	49,341	0
Alternative II	24,981	23,594	0
Alternative III	41,577	5,111	1,897
Alternative IV	41,625	5,484	1,434
Alternative V	46,471	2,375	0
Alternative VI	40,573	6,026	1,657

The Fremont-Stoddard crucial habitat area under the CDCA plan encompasses approximately 46,649 acres. A total of 5,118; 3,157 and 38,341 acres overlay tortoise densities of greater than 250 per square mile, 100-250 per square mile and 20-50 per square mile respectively.

The Mojave Saltbush Unusual Plant Assemblage (UPA) will not be affected by this alternative. The 497,835 acres located in the LTA Project Area will be minimally impacted by land use changes possible under current management. Acreages for the UPA for each alternative are presented in Table 4.2.

4.1.4 HUMAN ENVIRONMENT

Cultural Resources

Cultural resources exist throughout the LTA Project Area. Under the existing setting, there are a total of 340 known cultural resource sites in the LTA Project Area (See Table 4.3). A total of 140 of these are located on BLM lands (128 in San Bernardino County and 12 in Kern County), 180 are located on either private or state land, and another 20 are located on lands of uncertain ownership. In addition to the known sites, 26 potentially sensitive areas, or cultural resource polygons, are located within the LTA Project Area. The current relative percentages of landownership is shown under the Alternative I heading in Table 4.4.

Under the current landownership situation, management of an unknown number of other cultural resource sites is difficult due to the checkerboard pattern of BLM land holdings and isolation of many smaller tracts of public land. Split ownership of many of the cultural resource polygons also creates management and protection problems for those resources located within the defined polygons.

Cultural resources located on private lands in the LTA Project Area currently receive limited protection under state and local regulations, as well as through the San Bernardino County land use categories.

Recreation and Public Access

Effective recreation and public access management are presently restricted due to the current landownership patterns. Commercial use of private land is blocked by contiguous blocks of public land and vice versa, precluding such uses as competitive events which require greater than one square mile. The potential for trespass on either private or public land is great.

Visual and Aesthetic Resources

Visual and aesthetic resources, as discussed in Chapter 3, occur within the entire LTA Project Area and are of value to travelers, campers, hikers, and other users of the desert. Selection of the No Action alternative would result in a continuation of present management of the visual and aesthetic resource, constraining efficient management. Management of viewsheds, vistas and resource view areas is restricted by different levels of management capability imposed by interspersed public and private land.

TABLE 4.2 APPROXIMATE ACREAGES IN THE MOJAVE SALTBUSH UNUSUAL PLANT ASSEMBLAGE WHICH FALL IN CONSOLIDATION, RETENTION, AND DISPOSAL ZONES BY ALTERNATIVE

ALTERNATIVE	CONSOLIDATION ZONES (1000s of acres)	RETENTION ZONES (1000s of acres)	DISPOSAL ZONES (1000s of acres)
Alternative I	0.0	297.4	192.0
Alternative II	13.2	356.8	120.0
Alternative III	65.8	225.5	189.6
Alternative IV	168.6	105.1	211.7
Alternative V	272.8	147.0	71.3
Alternative VI	148.5	179.6	157.1

The UPA encompasses an area of approximately 601,400 acres in the Mojave Desert. Excluding the acreage which lies outside of the LTA Project Area and that which is on military reservations, a total of approximately 497,800 acres of UPA is within the LTA Project Area.

TABLE 4.3 KNOWN PREHISTORIC AND HISTORIC CULTURAL RESOURCE SITES IN THE LTA PROJECT AREA, LISTED BY ALTERNATIVE AND LANDOWNERSHIP

	ALTERNATIVE[2]					
Cultural Resources Sites[1]	I	II	III	IV	V	VI
Public	140	222	222	235	258	237
Private/State	180	112	113	103	69	94
Unknown[1]	20	6	5	2	13	9
	340	340	340	340	340	340

[1] Unknown landownership includes those resources for which existing site files do not indicate conclusively the landownership situation.

[2] Figures shown for Alternatives II through VI reflect proposed changes under each alternative.

TABLE 4.4 RELATIVE PERCENTAGE CHANGE IN PRIVATE/PUBLIC LANDOWNERSHIP UNDER THE DEFINED ALTERNATIVES FOR EACH OF THE BLM-IDENTIFIED CULTURAL RESOURCE POLYGONS.

Cultural Resource Polygon No.		ALTERNATIVE I	II	III	IV	V	VI
126	Private	60	60	60	40	0	0
	Public	40	40	40	60	100	100
127	Private	75	60	75	75	0	0
	Public	25	40	25	25	100	100
129	Private	50	10	0	0	0	0
	Public	50	90	100	100	100	100
130	Private	25	25	0	0	0	0
	Public	75	75	100	100	100	100
152	Private	60	100	100	100	100	100
	Public	40	0	0	0	0	0
153	Private	100	100	100	100	100	100
	Public	0	0	0	0	0	0
156	Private	0	0	0	0	0	0
	Public	100	100	100	100	100	100
158	Private	0	0	0	0	0	0
	Public	100	100	100	100	100	100
159	Private	40	40	40	50	0	0
	Public	60	60	50	50	100	100
160	Private	0	0	0	0	0	0
	Public	100	100	100	100	100	100
161	Private	0	0	0	0	0	0
	Public	100	100	100	100	100	100
162	Private	50	50	0	0	0	0
	Public	50	50	100	100	100	100
174A	Private	0	0	0	0	0	0
	Public	100	100	100	100	100	100

Table 4.4 (Continued)

174B	Private	0	0	0	0	0	0
	Public	100	100	100	100	100	100
175	Private	40	30	30	30	40	40
	Public	60	70	70	70	60	60
176	Private	40	30	30	30	40	40
	Public	60	70	70	70	60	60
177	Private	40	40	40	40	50	40
	Public	60	60	60	60	50	60
178	Private	50	50	50	0	0	0
	Public	50	50	50	100	100	100
179	Private	35	50	90	90	90	90
	Public	65	50	10	10	10	10
180	Private	40	60	100	100	60	100
	Public	60	40	0	0	40	0
181	Private	75	100	100	100	100	100
	Public	25	0	0	0	0	0
182	Private	100	100	100	100	100	100
	Public	0	0	0	0	0	0
183	Only a small portion of this polygon is located within the project area. Changes in landownership will have a small potential impact to cultural resources						
195	Private	50	75	100	100	100	75
	Public	50	25	0	0	0	25
196	Private	85	75	50	60	50	90
	Public	15	25	50	40	50	10
197	Private	20	70	75	0	20	20
	Public	80	30	25	100	80	80

[1] Percentages of landownership in the existing environment (Alternative I) and proposed Alternatives II-VI are approximate and are provided for relative change comparison.

Socioeconomic Resources

Present economic growth is based to some extent on availability and location of real property and its spatial relationship to various community services, facilities, and transportation corridors. Optimum development of housing, schools, access roads, etc., is not possible as long as public and private land are interspersed in the prime development areas. Instead, sporadic growth patterns are encouraged.

While the potential for urbanization exists under this alternative, development is restricted by availability of utilities outside currently developed areas. Interspersed public lands restrict development of large tracts of private land with adequate access and utility availability. Under current land management, very little interest has been expressed for development of either agricultural uses or small subdivisions in the land parcels currently unclassified. Land currently available is not being acquired.

Other than development, landownership does not appear to have a significant bearing on socioeconomic factors.

4.1.5 LAND USE AND PATTERNS

Areas of Critical Environmental Concern

Lands important to the efficient management of the Rainbow Basin ACEC which are currently in private ownership would not be consolidated under public land management under this alternative. Therefore, this alternative least facilitates efficient management of the Rainbow Basin ACEC.

Range and Grazing Resources

Grazing resources themselves are not adversely impacted under present management guidelines but options for improvement and enhanced management are constrained by the existing checkerboard pattern of landownership which constrains development. Table 4.6 lists current acreages and Availability of Utilities (AUM's) for each allotment.

Agricultural Resources

Little interest has been expressed in the agricultural land currently available for agricultural entry under present management. Development of agricultural resources is based on available water resources, the lack of which may preclude development. Approximately 3,840 acres of Public land identified for disposal would be within the San Bernardino County agricultural land use category (see Table 4.5).

Military Testing and Training Requirements

Military testing and training requirements are discussed in Section 3.5.3.1 where the principal issues of public health, safety and encroachment are addressed.

The No Action alternative does not address the concerns related to these issues. Thus, the consequences of implementating the No Action alternative are impacts to the Air Force missions due to a lack of a structured document for public health and safety concerns and continued encroachment on the air space necessary for various aspects of military test and training requirements at Edwards and George Air Force Bases and in the test corridors over both public and private land (see Fig. 3.1).

TABLE 4.5 PUBLIC LAND WITHIN DISPOSAL ZONES CLASSED AS AGRICULTURAL

ALTERNATIVE	ACREAGE
Alternative I	3,840
Alternative II	6,376
Alternative III	12,753
Alternative IV	13,391
Alternative V	10,680
Alternative VI	10,361

TABLE 4.6 GRAZING ALLOTMENT RELATIONSHIPS FOR ALTERNATIVE I

ALLOTMENT	RANGE TYPE	CLASS LIVESTOCK	LIVESTOCK AUMs	LANDOWNERSHIP Federal acres (1000s)	State acres (1000s)	Private acres (1000s)
Harper Dry Lake	Eph/Per	Cattle	600	161	-	7.2
Superior Valley	Eph	Sheep	2247	131.8	1.9	45.8
Gravel Hills	Eph	Sheep	2698	115.1	3.2	102.4
Shadow Mountain	Eph	Sheep	2557	36.5	-	11.8
Goldstone	Eph	Sheep	572	2.6	-	0.64
Stoddard Mountain	Eph	Sheep	1645	87.7	0.32	21.4
Buckhorn Canyon	Eph	Sheep	702	12.8	-	2.6
Monolith Cantil	Eph	Sheep	200	19.2	-	26.6
Boron Sheep	Eph	Sheep	157	11.4	-	27.5
Bissel	Eph	Sheep	308	4	-	a
Oak Creek	Per	Cattle	16	0.16	-	a
Warren	Per	Sheep	55	0.58	-	a
Antelope Valley	Eph	Sheep	529	6.5	-	a
Double Mountain	Per	Cattle	32	0.58	-	a

a. Undefined due to undefined boundaries

4.2 ALTERNATIVE II

4.2.1 RESOURCES NOT IMPACTED BY THE ALTERNATIVE

Resources eliminated from discussion under Alternative II include those eliminated for all alternatives: Native American values; threatened and endangered plants; utility corridors and access; soils; and noise.

4.2.2 PHYSICAL ENVIRONMENT

Physical environment impacts are a consequence of development activities that may result from changes in landownership pattern.

Air Resources

Air resources may be degraded as a result of increased auto or industrial emissions. Because a significant amount of air pollution in the project area results from out of basin import, the effect is expected to be minimal and related to development (see Section 3.2.1). Impact from auto and/or industrial sources would be concentrated in the Barstow/Victorville and I-15 corridor areas. Under Alternative II, the greatest effect is anticipated to be near Barstow (see Section 3.2.1). However, this effect may be modified with respect to vehicle emission by the fact that Victorville is closer to the urban centers of San Bernardino and Los Angeles making it a potentially more desirable location for commuters.

Groundwater Resources

Groundwater aquifers, particularly the Mojave River Aquifer, may suffer additional overdrafting due to increased demand resulting from development (see Section 3.2.2.1). Increased demand will result if newly acquired private land is developed for domestic (RUL) or industrial (IND) uses, necessitating higher water use rates. These effects are anticipated to occur primarily near Barstow, but may also be modified by housing location preferences.

Surface Water Resources

Surface water quality could be degraded by additional pollutant loads discharged to local drainages in Barstow and/or Victorville if development occurs (see Section 3.2.2.2). These increased pollutant and discharge loads are anticipated based on increases in domestic water uses (RES and RUL areas) and an accompanying increase in runoff which contains fertilizer, various pesticides, and increased storm runoff over urban areas (e.g., paved areas). Additional runoff would occur in industrial (IND) and commercial (COM) land use category areas.

Paleontological Resources

Paleontological resources occurring on public lands to be consolidated, and to a lesser extent those in retention zones, would benefit from more effective management facilitated by contiguous public

ownership. Conversely, some paleontological resources which are currently undocumented may be included in public lands marked for disposal. Mitigation measures for paleontological resources are discussed in Chapter 1 (see Sections 1.3 and 3.2.3).

Specific identified paleontological resources on private land just outside the Rainbow Basin ACEC (northwest side) will remain in private ownership under this alternative and thus not be afforded the additional protection of consolidation.

Continuation of existing multiple use classifications would result in no change for management of paleontological resources, except that public lands would be consolidated within the classifications. Acquired holdings would be designated as MUC Class L, thereby affording additional protection to paleontological resources.

4.2.3 BIOLOGICAL ENVIRONMENT

Wildlife Resources

For wildlife, this alternative provides some protection for the unique habitat near Harper Dry Lake. Management of the Harper Dry Lake ACEC would enhance wildlife species protection by virtue of the land management practices incorporated in the ACEC and a consolidation zone.

Alternative II would result in the addition of 3,040 acres (approximately 11% of present BLM holdings) to private holdings (disposal) and a gain of 1,280 acres (approximately 2.4% of present private holdings) to BLM holdings (consolidation) in areas with greater than 250 desert tortoise per square mile. It is assumed that a change to private ownership would result in the loss of tortoise habitat.

Implementation of this alternative would add 18,144 acres (approximately 12.8% of present BLM holdings) to private holdings and transfer 4,480 acres (approximately 2.4% of present private holdings) to BLM holdings (consolidation) in areas supporting 100-250 desert tortoise per square mile (see Tables 4.7 and 4.8).

This alternative would affect the desert tortoise as a result of habitat loss in the disposal zones. The Fremont-Stoddard crucial habitat area contains no disposal acreage under this alternative (see Table 4.1). The Mohave ground squirrel would benefit from this alternative as a result of consolidated public holdings in a portion of its prime habitat areas. Population numbers would be reduced in the disposal zones due to habitat loss. Acreage roughly correlated to the UPA area would provide optimum habitat for this species (see Table 4.2). In the case of the Mohave vole, development in the riparian habitat type along the Mojave River (approximately 5,800 acres) would result in some habitat loss. Habitat around Harper Dry Lake would be protected to some extent by the consolidation zone, precluding total loss of habitat.

TABLE 4.7 CHANGES IN OWNERSHIP IN AREAS SUPPORTING MORE THAN 250 DESERT TORTOISE/SQUARE MILE

	PUBLIC TO PRIVATE (Acres)			PRIVATE TO PUBLIC (Acres)			TOTAL LOSS/GAIN PUBLIC LAND (Acres)
MAP UNIT (see Fig. 3.1)	1	2	3	1	2	3	
TOTAL ACREAGE IN AREA OF CONCERN	2,560	1,280	21,120	2,560	1,280	21,120	
ALTERNATIVE I	0	0	0	0	0	0	0
ALTERNATIVE II	1,920	0	1,120	0	1,280	0	-1,760
ALTERNATIVE III	2,560	0	10,880	0	1,280	0	-12,160
ALTERNATIVE IV	2,560	0	21,120	0	1,280	0	-22,400
ALTERNATIVE V	1,920	0	704	0	1,280	0	-1,344
ALTERNATIVE VI	2,112	0	12,224	0	1,280	0	-13,056

TABLE 4.8 CHANGES IN OWNERSHIP IN AREAS SUPPORTING 100-250 DESERT TORTOISE/SQUARE MILE.

	PUBLIC TO PRIVATE (Acres)				PRIVATE TO PUBLIC (Acres)				TOTAL LOSS/ GAIN PUBLIC LAND (Acres)
MAP UNIT (see Fig 3.1)	4	5	6	7	4	5	6	7	
TOTAL ACREAGE IN AREA OF CONCERN	5,760	55,040	15,360	65,920	5,760	55,040	15,360	65,920	
ALTERNATIVE I	0	0	0	0	0	0	0	0	0
ALTERNATIVE II	5,664	8,960	640	2,880	0	640	1,280	2,560	-4,704
ALTERNATIVE III	5,664	10,880	10,240	2,560	0	16,000	2,880	4,480	-5,984
ALTERNATIVE IV	5,760	11,520	10,240	24,960	0	35,200	2,880	11,200	-3,200
ALTERNATIVE V	5,760	0	0	0	0	51,840	3,840	19,200	+69,120
ALTERNATIVE VI	5,664	10,880	10,240	19,200	0	40,320	2,880	9,280	-6,496

Plant Resources

Plant populations of the cactus Sclerocactus polyancistrus occur in the hills to the east and northeast of George Air Force Base on land slated for disposal, as do populations of Chorizanthe spinosa in the Boron area. Mitigation measures may be required to minimize the loss of these locations and the effect on the overall distribution of these two species. The UPA will be impacted by changes in landownership and use, resulting in approximately 13,230 acres being in consolidation, 356,790 acres in retention zones and 119,960 acres in disposal zones. Loss of the acreage in the disposal zones would not adversely affect the UPA (see Table 4.2).

4.2.4 HUMAN ENVIRONMENT

Cultural Resources

Cultural resources are known for both historic and prehistoric sites. The number of known historic and prehistoric sites on public lands in the consolidation and retention zones would increase from 128 to 210 under this alternative (see Table 4.3). This increase would make possible more effective management of cultural resource properties in the 70,304 acre consolidation zones (see Section 3.4.1). Relatively minor changes in landownership patterns of the identified cultural resource polygons would occur in the disposal zones.

Existing public land multiple use classifications would continue for lands in the consolidation and retention zones. As indicated in Table 4.3, known cultural resource properties located on public lands would increase by about 82 sites, thereby increasing the number of sites afforded protection by BLM and other governmental agencies.

Protective measures afforded cultural resources under the San Bernardino County land use categories would continue in the retention and disposal zones. Private lands in the consolidation zones may be considered for designation as Rural Living, which, in conjunction with the overall consolidated land pattern, would increase protection for cultural resource properties.

Recreation and Public Access

Recreation use opportunities will be somewhat enhanced in the Black Mountain and Superior Valley areas. Enhancement is a result of consolidation of public land in an area where future access problems might develop if the public land is not blocked up.

Visual and Scenic Resources

Visual and scenic resources are benefited under this alternative due to consolidation of large blocks of land which enables more positive application of sound visual management techniques. Scenic private lands adjacent to Rainbow Basin ACEC will not be consolidated under this alternative, a negative effect.

Socioeconomic Resources

Socioeconomically, a minor potential for increased urbanization exists under this alternative. The private land base in the close proximity to urban centers (Barstow and Victorville) could be increased by as much as 3,000 acres. However, interest in development of these areas has been low due to the ample availability of existing private land. Further, development in these areas is constrained more by lack of demand and lack of services (water, sewer, fire protection, etc.) than by lack of developable land. As a consequence, the implementation of this alternative has only a minor potential for influencing urban development. Another factor is that the exchange of public lands under this alternative may result in the loss of four county borrow pits for road repair materials. Estimated cost to the county of hauling aggregate from more remote sites is about $20,000 per year.

Together, the lack of increased urban development and the loss of the borrow pits will not amount to a significant socioeconomic impact if this alternative is implemented.

4.2.5 LAND USES AND PATTERNS

Areas of Critical Environmental Concern

Black Mountain ACEC is within a consolidation zone under this alternative and will therefore be afforded the protection of consolidated federal management. The northern boundary of the ACEC abuts a private landholding in a retention zone and may suffer some impact from this status.

Harper Dry Lake ACEC is within a consolidation zone but is bordered on the west and south by land in a disposal zone. Values of the ACEC could be impacted by development on the private land.

The Eriophyllum ACEC is in a retention zone under Alternative II which does not promote resource value protection under public land management. It abuts private land on three sides and may therefore be subject to resource value degradation.

The Kramer Hills ACEC is in a retention zone with private land along its eastern boundary. This status does not promote resource protection. Some degradation of resource values may result from lack of consolidated lands surrounding the area.

The Rainbow Basin ACEC is in a retention zone, which does not promote inclusion of the private land to the north, south and east of existing boundaries into federal management.

The Helendale ACEC is in a retention zone under Alternative II, which does not promote inclusion of surrounding lands under federal management by consolidation. The western boundary of the ACEC is adjacent to a disposal zone under this alternative, potentially allowing encroachment on the resource values of the ACEC. Existing land use categories include residential (RES), agricultural (AGR), and rural living (RUL). These designations may degrade (RES) or enhance (AGR, RUL) the values of the ACEC.

Wilderness Study Area

Black Mountain WSA is within a consolidation zone under this alternative. Wilderness values will not be impaired. The ability to maintain identified wilderness values in the area would be enhanced by federal jurisdiction and management of all lands within the WSA boundary.

Range and Grazing Resources

Grazing management would be improved through consolidation of both private and public lands used for this purpose. Primarily this effect is due to better control of allotments. Impacts on grazing allotments will result from development on allotments.

This alternative would place public land in the Bissel, Oak Creek, Warren, Double Mountain, and Antelope Valley allotments in a disposal zone and thus available for trade to the private sector (see Table 4.9). Most of the public land on the Boron Sheep, Monolith Cantil, Buckhorn Canyon, Stoddard Mountain, Shadow Mountains, Gravel Hills, Goldstone, and the Superior Valley allotments would remain in retention zones (i.e., under present ownership and management). The permittee would not be impacted on these allotments. Most of the Harper Dry Lake allotment and portions of the Superior Valley, Gravel Hills, and Buckhorn Canyon allotments would be in a consolidation zone (i.e., public ownership). Consolidation of public land should present opportunities for more effective range management activities and could result in range improvement and increased livestock grazing. Increased forage availability on public lands could allow BLM to increase the number of AUMs for that allotment with a subsequent increase in the grazing fees charged for that allotment, thus increasing income for the District.

Private land in the consolidation zones exists in the Harper Dry Lake, Superior Valley, Gravel Hills, and Buckhorn Canyon allotments for this alternative (Table 4.9). Grazing on private land would be determined by land use and county zoning factors and would not change unless resources are developed or land use categories altered.

Federal land in the LTA Project Area would increase by about 13,080 acres under this alternative while losing about 562 AUMs. The Ridgecrest Resource Area would lose about 14,720 acres of federal land and about 979 AUMs. The Barstow Resource Area would gain about 27,800 acres and 417 AUMs (Table 4.10). Private gains or losses would be the opposite of the federal land changes.

TABLE 4.9 GRAZING ALLOTMENT RELATIONSHIPS FOR ALTERNATIVE II

ALLOTMENT	ZONES[1]	LANDOWNERSHIP			ANIMAL UNIT MONTHS[2]			MUC[3]	LUC[4]
		Federal acres (1000s)	State acres (1000s)	Private acres (1000s)	Federal AUMs	State AUMs	Private AUMs		
Harper Dry Lake	C	12.4	-	5.1	462	-	191	L	RL
	R	-	-	-	-	-	-	-	-
	D	3.7	-	2.1	138	-	78	U	CNT
Superior Valley	C	19.8	1.9	14.2	265	25	190	L	RL
	R	112.0	-	31.6	1502	-	424	M	CNT
	D	-	-	-	-	-	-		
Gravel Hills	C	17.3	-	17.4	405	-	408	L	RL
	R	97.8	-	85.0	2293	-	1992	L	CNT
	D	-	-	-	-	-	-	L	RL
Shadow Mountains	C	-	-	-	-	-	-	-	-
	R	34.3	-	11.8	2404	-	827	U	CNT
	D	2.2	-	-	153	-	-	U	CNT
Goldstone	C								
	R	2.6		.6	165		41	L	CNT
	D								
Stoddard Mountain	C	-	-	-	-	-	-	-	-
	R	85.1	.3	20.5	892	3	215	U	CNT
	D	2.6	-	.9	28	-	9	U	CNT
Buckhorn Canyon	C	1.5	-	.5	84		26	L	RL
	R	10.4	-	2.1	569		117	M/U	CNT
	D	.9	-	-	49			U	CNT
Monolith Cantil	C	-	-	-	-	-	-	-	-
	R	19.2	-	25.5	200		266	L	CNT
	D	-	-	1.1	-		11	-	CNT
Boron Sheep	C	-	-	-	-	-	-	-	-
	R	8.6	-	14.6	118		201	U	CNT
	D	2.9	-	12.9	39		178	U	CNT
Bissel	C	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-
	D	4.0	-	-	308			U	CNT
Oak Creek	C	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-
	D	0.16	-	-	16			U	CNT
Warren	C	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-
	D	0.58	-	-	55			U	CNT
Antelope Valley	C	-	-	-	-	-	-		
	R	-	-	-	-	-	-		
	D	6.5	-	-	529	-	-	U	CNT
Double Mountain	C	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-
	D	0.58	-	-	32	-	-	U	CNT

[1] LTA Zones: C=Consolidation Zones, R=Retention Zones, D=Disposal Zones

[2] AUMs were calculated using the federal acreage and average 5-year AUMs to determine acres per AUM for an allotment. The percentage of federal land was used in each zone to calculate the acres and AUMs for each allotment. The assumption was made that private land would be grazed similarly to federal land. The acres/AUM calculation for federal land was used to calculate the acres and AUMs for private land within each allotment. Calculating AUMs in this manner assumes that the vegetation is similar across the allotment and that the acres/AUM can reasonably be based on 5-year AUM averages.

[3] Multiple Use Classification on Public Land
L (Limited) M (Moderate) U (Unclassified)

[4] Land Use Categories in San Bernardino County
RL (Rural Living) RC (Rural Conservation) CNT (Continued Existing Uses)

TABLE 4.10 CHANGES TO FEDERAL ACREAGE AND AUMs ON GRAZING ALLOTMENT BY ALTERNATIVE

ALLOTMENT	ALTERNATIVE I		ALTERNATIVE II		ALTERNATIVE III		ALTERNATIVE IV		ALTERNATIVE V		ALTERNATIVE VI	
	ACRES (1000s)	AUMS	ACRES (1000s)	AUMS	ACRES (1000s)	AUMS	ACRES (1000s)	AUMS	ACRES (1000s)	AUMS	ACRES (1000s)	AUMS
Harper Dry Lake	16.1	600	1.4	53	1.4	53	1.4	53	1.4	53	1.4	53
Superior Valley	131.8	2247	14.2	190	13.2	176	27.9	373	43.1	577	28.9	387
Gravel Hills	115.1	2698	17.4	408	38.9	912	78.8	1848	102.4	2400	80.9	1896
Shadow Mountain	36.5	2557	-2.2	-153	-0.9	-62	-4.5	-319	4.2	293	-4.4	-311
Goldstone	2.6	572	0	0	0	0	0	0	0.64	41	0.6	41
Stoddard Mountain	87.7	1645	-2.6	-28	-31.6	-331	-31.6	-331	0.4	3	-30.3	-318
Buckhorn Canyon	12.8	702	-0.4	-53	0.3	15	0.3	15	1.7	94	-0.9	-49
Monolith Cantil	19.2	200	0	0	9.6	100	16	166	24.5	255	24.5	255
Boron Sheep	11.4	157	-2.9	-39	-5.9	-82	-11.4	-157	3.6	49	-1.9	-27
Bissel	4	308	-4	-308	-4	-308	-4	-308	-4	-308	-4	-308
Oak Creek	0.16	16	-0.16	-16	-0.16	-16	-0.16	-16	-0.16	-16	-0.16	-16
Warren	0.58	55	-0.58	-55	-0.58	155	-0.58	-55	-0.58	-55	-0.58	-55
Antelope Valley	6.5	529	-6.5	-529	-6.5	-529	-6.5	-529	-6.5	-529	-6.5	-529
Double Mountain	0.58	32	-0.58	-32	-0.58	-32	-0.58	-32	-0.58	-32	-0.58	-32
Total (Net)			13.08	-562	13.18	-2.59	65.08	+708	170.12	282.5	86.98	987
Ridgecrest Resource Area (Net)			27.8	417	-8.12	-1022	-7.22	-931	-16.28	-636	-10.78	-712
Barstow Resource Area (Net)			-14.72	-979	21.30	763	72.3	1693	153.84	3461	76.2	1699

A limited (Class L) use classification is proposed for all land in the consolidation zones on all allotments. Limited use is designated for the retention zones on the Gravel Hills and Monolith Cantil allotments. Moderate (Class M) use classification is designated for the retention zones on the Superior Valley allotment and most of Buckhorn Canyon allotment. The remainder would be unclassified either because it is in the disposal zones or did not have a multiple use classification in the California Desert Plan. Multiple use classifications which would exist under this alternative do not exclude grazing.

The portion of the allotments proposed for consolidation is recommended for a Rural Living (RUL) designation under San Bernardino County zoning. The remaining portions of the allotments are to continue under existing land use categories. Impact on grazing allotments is assumed if development occurs under a Rural Living designation. A Rural Living designation allows housing development on land parcels as small as 2.5 acres, potentially obstructing or eliminating access to allotments and altering available forage bases.

Agricultural Resources

Changes in landownership pattern may result in impact to availability of land suitable for agricultural development. Current overdraft of the Mojave River aquifer precludes additional agricultural development based on water from that source. Available water is an economic prerequisite for agricultural operations. Individual perceptions will dictate feasibility of agricultural operations. Agricultural development would be affected by changes in landownership patterns where private land is subsequently zoned to allow agricultural activity. Approximately 6,376 acres of Public land identified for disposal would be within the San Bernardino County Agricultural land use category (see Table 4.5). MUC Class M, L, C, and I prohibit agricultural uses on public land (except for livestock grazing).

Geology and Minerals

Numerous mining claims exist within the disposal zones for this alternative with at least 60 in the southern Oro Grande area alone. Land exchanges will be subject to prior rights of mining claimants (see Section 1.3).

This alternative would eliminate four county borrow sites for road maintenance materials at an estimated cost of $20,000 per year.

Consolidation of public lands over areas which contain mineral resources or have potential for other energy source development would be a beneficial impact, allowing mining and energy developers access to large areas of land controlled by a single federal land management agency with no privately owned land parcels intermixed.

Structural height restrictions in the supersonic corridors may impact future mine development by altering location of structures required for mine operations.

Military Testing and Training Requirements

Military testing and training requirements would be minimally served by this alternative. Formulation criteria for this alternative include only the highest priority use areas for military operations, and this alternative provides only minimal protection for public health and safety concerns and against encroachment problems. The most critical portion of the ingress corridor for George AFB is in a consolidation zone, thus offering some protection for the Air Force mission at George AFB. However, the remainder of the ingress corridor for George AFB is in a retention zone, which will not prevent future encroachment problems in that area. Portions of the supersonic corridor and all of the PIRA are in a retention zone, resulting in future public health, safety and encroachment problems. Continuing encroachment could result in the loss of military use for the three corridors. Specifically, if the expanded PIRA is not available for use, economical testing of new technology weapons with expanded safety buffer zones, related to this corridor, would no longer be possible since the only other site is located in Utah, approximately 400 nautical miles away. Loss of the supersonic low-level flight corridor would result in the total loss of instrumented testing for supersonic low-level flights, for the free world, thereby severely impacting the missions necessary for national security.

4.3 ALTERNATIVE III

4.3.1 RESOURCES NOT IMPACTED BY THE ALTERNATIVE

Resources eliminated from discussion under Alternative III include those eliminated for all alternatives: Native American values, threatened and endangered plants; utility corridors and access, soils; and noise.

4.3.2 PHYSICAL ENVIRONMENT

Physical environment impacts are a consequence of development activities that may result from changes in landownership patterns.

Air Resources

Air resources in the project area may suffer minimal degradation as a result of increased auto or industrial emissions. Impact from auto and/or industrial sources would be concentrated in the Barstow/Victorville and I-15 corridor areas. Under Alternative III, the greatest effect is anticipated to be near Barstow (see Section 3.2.1). However, this effect may be modified with respect to vehicle emissions by the fact that Victorville is closer to the urban centers of San Bernardino and Los Angeles, making it a potentially more desirable location for commuters. Currently, a significant amount of the air pollution in the project area results from out of basin import.

Groundwater Resources

Groundwater aquifers, particularly the Mojave River Aquifer could suffer additional overdraft due to increased demand resulting from development (see Section 3.2.2.1). Increased demand would result if newly acquired private land is developed for domestic (RES or RUL) or industrial (IND) uses, necessitating higher water use rates. These effects are anticipated to occur primarily near Barstow, but may be modified by housing location preferences.

Surface Water Resources

Surface water quality could be degraded by additional pollutant loads to local drainages in Barstow and/or Victorville if development occurs (see Section 3.2.2.2). These increased pollutant and discharge loads are anticipated based on increases in domestic water uses (RES and RUL areas) and an accompanying increase in runoff which contain fertilizers, various pesticides, and increased storm runoff over urban areas (e.g., paved areas). Additional runoff would occur in industrial (IND) and commercial (COM) land use category areas.

Paleontological Resources

Consolidation of public lands containing paleontological resources would benefit those resources by facilitating more effective management of contiguous public lands under this alternative. Some presently

undocumented paleontological resources may be included in public lands marked for disposal. Mitigation measures for paleontological resources are discussed in Sections 1.3 and 3.2.3.

Specific identified paleontological resources on private land just outside the Rainbow Basin ACEC (northeast side) will remain in private ownership under this alternative, precluding the additional protection afforded by inclusion in consolidated public ownership.

Consolidated land would be classified as MUC Class L while land in the retention zones would be MUC Class M. These MUC designations would result in no changes in management of paleontological resources.

4.3.3 BIOLOGICAL ENVIRONMENT

Wildlife Resources

The area to the south and west of Edwards Air Force Base is classified as a public land disposal zone and could limit wildlife in that area as a result of habitat losses if it is developed.

The desert tortoise found in the Fremont-Stoddard crucial habitat area would lose 1,897 acres in the public land disposal zones (see Table 4.1). The Mohave vole would do well at the Harper Dry Lake site in a consolidation zone as a result of public land management, but could suffer a reduction in population numbers if private development occurs along the Mojave River (approximately 7,716 acres). The Mohave ground squirrel would do better in the retention and consolidation zones. Acreages of optimal habitat are roughly correlated to UPA area (see Table 4.2). This species would be reduced in numbers in the large public land disposal zones due to habitat losses.

Alternative III would result in the addition of 13,440 acres (approximately 21.0% of present BLM holdings) to private holdings (disposal) and a gain of 1,280 acres (approximately 2.4% of present private holdings) to BLM holdings (consolidation) in areas with greater than 250 desert tortoise per square mile. It is assumed that a change to private ownership will result in the loss of tortoise habitat (see Tables 4.7 and 4.8).

Implementation of this alternative would add 29,344 acres (approximately 20.7% of present BLM holdings) to private holdings (disposal) and transfer 23,360 acres (approximately 12.7% of present private holdings) to BLM holdings (consolidation) in areas supporting 100-250 desert tortoise per square mile.

Plant Resources

In San Bernardino County, Sclerocactus polyancistrus is in the hills and alluvium below the hills to the north and northeast of George Air Force Base. These populations are located on land designated for public land disposal.

Sclerocactus polyancistrus is located in the hills north and west of Barstow on land designated for public land disposal. Eriogonum mohavense occurs south of Harper Dry Lake on lands designated for public land disposal.

In Kern County, in the Boron area, populations of Chorizanthe spinosa are within the designated public disposal zones. Cymopterus deserticola in the Boron area is also within the designated public land disposal zones. Puccinellia parishii between Mojave and Boron is within the designated disposal zones.

No species of concern should be affected in Los Angeles County. Field studies on a case by case basis in these areas are adequate. Mitigation measures may be required for the population to lessen the impact of the loss on the overall species distribution in the Mojave Desert.

Field studies of individual parcels will be required to document the extent of these affected populations.

The UPA will be impacted by changes in landownership (see Table 4.2) and use, resulting in 65,800 acres in consolidation, 225,500 acres in the retention zones, and 189,600 acres in disposal zones. Loss of the acreage in the disposal zones is not anticipated to adversely impact the UPA.

4.3.4 HUMAN ENVIRONMENT

Cultural Resources

The number of known cultural resource sites on public lands would increase to 210, an increase of 82 sites over the existing number (see Table 4.3). While some individual changes in ownership of lands in the cultural resource polygons would occur, the net effect of the changes would be minimal (Table 4.4). More effective management of cultural resources would be possible in the larger consolidation zones with the new ownership pattern. Existing management problems would continue in the retention zones.

Designation of lands as Class L in the consolidation zones would increase resource protection for known and unknown cultural resource properties on those lands. Redesignation of presently unclassified lands in the retention zones to MUC Class M (moderate) would increase protection of cultural resources in those zones as a result of the more controlled nature of the M designation. Reclassification and disposal of some 187,200 acres would result in loss of protective management for an unknown number of sites in those lands except as noted in Section 1.3.

Protective measures afforded cultural resources under the San Bernardino County land use categories would continue in the retention and disposal zones. Private lands in the consolidation zones may be considered for designation as Rural Living (RUL), which, in conjunction with the overall consolidated land pattern, would increase protection for cultural resource properties.

Recreation and Public Access

The change in landownership pattern under Alternative III will help resolve future potential conflicts between recreation use of public land and the rights of private landowners, especially in the consolidation zones. It will be particularly beneficial to the Calico National Recreation Lands and the Rainbow Basin ACEC.

Greater restrictions will apply to ORV uses in the consolidation zones that are changed from MUC Class M to MUC Class L. Specifically, competitive events will be restricted under MUC Class L. These restrictions include prohibition of pit, start, finish, and spectator areas, and limit ORV events to approved areas. In MUC Class M areas, events are permitted on existing routes of travel and the above restrictions do not apply. Consolidation should improve future recreational access in both MUC Class L and M areas due to reduced conflicts with private landowners.

Visual and Aesthetic Resources

Alternative III will have a positive effect on the management of visual resources in the project area. The greater the extent of contiguous public land blocks, the more positive the effect. Sound visual resource management techniques are best applied to these large blocks of land under single ownership. Scenic lands in the immediate vicinity of Rainbow Basin ACEC will be consolidated into federal (public) ownership. This protection would be a positive benefit to both the ACEC and the visual resources.

Socioeconomic Resources

Socioeconomically, a minor potential for increased urbanization exists under this alternative. However, interest in development of these areas has been low due to the ample availability of existing private land. A large area (approximately 20,000 acres) which is topographically separated from Barstow lies northwest of Barstow and will be in the disposal zones under this alternative. An additional 10,000 acres near I-15 between Barstow and Victorville, and 30,000 acres near Edwards Air Force Base will be available for exchange under this alternative. Further, development in these areas is constrained more by lack of demand and lack of services (water, sewer, fire protection, etc.) than by lack of developable land. As a consequence, the implementation of this alternative has only a minor potential for influencing urban development. Another factor is that the exchange of land under this alternative would result in the loss of five county borrow sites for road repair materials. The estimated cost to the county of hauling from more remote sites is estimated at $25,000 per year.

Together, the lack of increased urban development and the loss of the borrow pits will not amount to a significant socioeconomic impact if this alternative is implemented.

4.3.5 LAND USES AND PATTERNS

Areas of Critical Environmental Concern

Black Mountain ACEC is within a consolidation zone under Alternative III and would be afforded the protection of contiguous land management by BLM. No private lands would exist within a distance of one mile, providing an acceptable zone of protection for the resource values of the ACEC.

Eriophyllum ACEC is within a retention zone under Alternative III which does not promote attaining consolidated federal management to protect values for the ACEC. Private land will continue to abut three sides of the ACEC.

Harper Dry Lake ACEC is within a consolidation zone under Alternative III, providing protection of resource values for the ACEC. However, the south, west and a portion of the northern boundary abut a disposal zone, potentially subjecting the ACEC to resource value degradation as a result of development on private property outside of the ACEC boundaries.

Kramer Hills ACEC is in a retention zone under Alternative III, subjecting it to potential resource value degradation if development occurs on private land outside the ACEC boundaries. The majority of its boundaries, however, (4 miles out of 6) abut federal land.

Rainbow Basin ACEC is in a consolidation zone under Alternative III, affording it the protection provided by consolidated federal management. Land use categories in the immediate vicinity of the ACEC include residential (RES), Rural Living (RUL), and agricultural (AGR). While agricultural and Rural Living designations would potentially impact the ACEC only minimally, residential designation could potentially impact the resource values of the ACEC by encroachment.

Helendale ACEC is in a retention zone under Alternative III, which does not promote resource protection. In addition, the western and northern boundaries abut a public land disposal zone, subjecting it to potential resource value degradation by development. Land user categories in the immediate vicinity of the ACEC include residential (RES), Rural Living (RUL), and agricultural (AGR). While agricultural and rural designations would potentially impact the ACEC only minimally, residental designation could potentially impact the resource value of the ACEC by encroachment (e.g., visual).

Wilderness Study Area

The Black Mountain WSA is within a consolidation zone for this alternative. Wilderness values will not be impaired. The ability to maintain identified wilderness values in the WSA would be enhanced by federal jurisdiction and management of lands within the WSA boundary.

Range and Grazing Resources

Consolidation of the public and private lands would result in better grazing management. Primarily this would come through better control.

This alternative would place the public land in the Bissel, Oak Creek, Warren, Double Mountain, and Antelope Valley allotments in the disposal zones and available for trade to the private sector Portions of Harper Dry Lake, Superior Valley, Shadow Mountains, Stoddard Mountain, Buckhorn Canyon, and the Boron Sheep allotments would be in the disposal zones (see Table 4.11). Permittees would be detrimentally impacted (see Table 4.10). Availability of federal lease land in the consolidation zones would lessen this impact. Much of the public land on the Boron Sheep, Monolith Cantil, Stoddard Mountain, Shadow Mountains, Gravel Hills, Goldstone, and the Superior Valley allotments would remain in the retention zones, under federal ownership and management. Most of the public land in the Harper Dry Lake and Buckhorn Canyon allotments would be in the consolidation zones, i.e., public ownership (see Table 4.11). Consolidation of the public land should present opportunities for more effective range management activities and could result in range improvement and increased livestock grazing.

In the consolidation zones, private land exists in the Harper Dry Lake, Superior Valley, Gravel Hills, Shadow Mountains, Buckhorn Canyon, and Monolith Cantil allotments (Table 4.11). Except for Harper Dry Lake, Superior Valley and Buckhorn Canyon allotments, most of the private land on the allotments is in the retention and/or disposal zones. Grazing on private land would be determined by land use and county zoning factors and would not change unless resources are developed.

Public land in the LTA Project Area under this alternative would be increased by about 13,180 acres while losing only 259 AUMs. The Ridgecrest Resource Area would lose about 8,120 acres and about 1,022 AUMs. The Barstow Resource Area would gain about 21,300 acres and about 763 AUMs (see Table 4.10). Private land gains and losses would be the reverse of that for public land.

Most of the grazing allotments have Section 15 land which is based on a land lease requiring two-year notice to be terminated. The forage composition of the vegetation for livestock needs to be evaluated on those allotments in which large acreages are under public or private ownership in consolidation or disposal zones (see Section 1.3).

Agricultural Resources

Changes in landownership and subsequent consideration for designation under county land use categories could result in impact to availability of land suitable for agricultural development. Current overdraft of the Mojave River aquifer precludes additional agricultural development based on water from that source. Available water is an economic prerequisite for

TABLE 4.11 GRAZING ALLOTMENT RELATIONSHIPS FOR ALTERNATIVE III

ALLOTMENT	ZONES[1]	LANDOWNERSHIP Federal acres (1000s)	State acres (1000s)	Private acres (1000s)	ANIMAL UNIT MONTHS[2] Federal AUMs	State AUMs	Private AUMs	MUC[3]	LUC[4]
Harper Dry Lake	C	12.4	-	5.1	462	-	191	L	RL
	R	-	-	-	-	-	-	-	-
	D	3.7	-	2.1	138	-	78	U	CNT
Superior Valley	C	35.6	1.9	21.1	477	25	282	L	RL
	R	88.3	-	20.2	1184	-	270	M	CNT
	D	7.9	-	4.6	106	-	61	U	CNT
Gravel Hills	C	46.0	2.6	38.9	1079	-	912	L	RL
	R	69.1	.6	63.5	1619	-	1488	L	CNT
	D	-	-	-	-	-	-		
Shadow Mountain	C	1.5	-	1.3	102	-	91	L	RL
	R	32.9	-	10.5	2301	-	736	M	CNT
	D	2.2	-	-	153	-	-	U	CNT
Goldstone	C								
	R	2.6		.6	165		41	L	CNT
	D								
Stoddard Mountain	C	-	-	-	-	-	-	-	-
	R	56.1	-	11.3	588	-	119	M	CNT
	D	31.6	0.32	10.1	331	3	105	U	CNT
Buckhorn Canyon	C	9.1	-	1.2	495		64	L	RL
	R	2.8	-	1.4	154		75	M	CNT
	D	.9	-	-	43			U	
Monolith Cantil	C	7.7	-	9.6	80	-	100	L	RL
	R	11.5	-	14.6	120		152	L	CNT
	D	-	-	2.4	-		25	-	CNT
Boron Sheep	C	-	-	-	-	-	-	-	-
	R	5.5	-	6.9	75		95	M	CNT
	D	5.9	-	20.6	82		254	U	CNT
Bissel	C	-	-	?	-	-	-	-	-
	R	-	-	-	-	-	-	-	-
	D	4.0	-	-	308			U	CNT
Oak Creek	C	-	-	?	-	-	-	-	-
	R	-	-	-	-	-	-	-	-
	D	0.16	-		16			U	CNT
Warren	C	-	-	?	-	-	-	-	-
	R	-	-	-	-	-	-	-	-
	D	0.58	-	-	55			U	CNT
Antelope Valley	C	-	-	?	-	-	-		
	R	-	-	-	-	-	-		
	D	6.5	-	-	529	-	-	U	CNT
Double Mountain	C	-	-	?	-	-	-	-	-
	R	-	-	-	-	-	-	-	-
	D	0.58	-	-	32	-	-	U	CNT

[1] LTA Zones: C=Consolidation Zones, R=Retention Zones, D=Disposal Zones

[2] AUMs were calculated using the federal acreage and average 5-year AUMs to determine acres per AUM for an allotment. The percentage of federal land was used in each zone to calculate the acres and AUMs for each allotment. The assumption was made that private land would be grazed similarly to federal land. The acres/AUM calculation for federal land was used to calculate the acres and AUMs for private land within each allotment. Calculating AUMs in this manner assumes that the vegetation is similar across the allotment and that the acres/AUM can reasonably be based on 5-year AUM averages.

[3] Multiple Use Classification on Public Land
L (Limited) M (Moderate) U (Unclassified)

[4] Land Use Categories in San Bernardino County
RL (Rural Living) RC (Rural Conservation) CNT (Continued Existing Uses)

agricultural operations. Individual perceptions will dictate feasibility of agricultural operations. Approximately 12,753 acres of Public land identified for disposal would be within the San Bernardino County Agricultural land use category (see Table 4.5). MUC Class M, L, C, and I prohibit agricultural uses on public lands (except livestock grazing).

Geology and Minerals

Numerous mining claims are located in the disposal zones. About 60 mining claims exist in the Oro Grande area. Land exchanges will be subject to prior rights of mining claimants (see Section 1.3). Since conveyance of the mineral estate would not include mining claims, operations protected under the 1872 Mining Law would not be affected. Consolidation of public lands over areas which contain mineral resources or have potential for other energy source development should benefit as a result of more consistent surface management policies a single federal agency.

This alternative would eliminate five county borrow sites for road repair materials, necessitating hauling from more remote sites. The cost of this increased haulage distance is estimated at $25,000 per year.

Military Testing and Training Requirements

This alternative proposes consolidation of priority DoD needs with respect to the supersonic and George Air Force Base ingress corridors. The proposed Safety-Noise Overlay Designation (SNOD) would avoid future conflicts between private development and DoD activities. Many of the aspects of the encroachment issue would be satisfactorily eliminated under this alternative as a result of the consolidation zone designation for the ingress corridor for George AFB. Potential encroachment problems would still exist for the PIRA and a portion of the supersonic corridor. Continuing encroachment could result in the loss of military use for the three corridors. Specifically, if the expanded PIRA is not available for use, economical testing of new technology weapons with expanded safety buffer zones, related to this corridor, would no longer be possible since the only other site is located in Utah, approximately 400 nautical miles away. Encroachment into the northern half of the supersonic low-level flight corridor could potentially limit the testing capability in the corridor as technology advances.

4.4 ALTERNATIVE IV

4.4.1 RESOURCES NOT IMPACTED BY THE ALTERNATIVE

Resources eliminated from discussion under Alternative IV include those eliminated for all alternatives: Native American values; threatened and endangered plants; utility corridors and access; soils; and noise.

4.4.2 PHYSICAL ENVIRONMENT

Physical environment impacts are a consequence of development activities that may result from changes in landownership patterns.

Air Resources

Air resources in the project area may be degraded as a result of changes in landownership patterns and land use categories due to increased auto and/or industrial emissions. Because a significant amount of current air pollutants in the project area result from out of basin import, the effect is expected to be minimal and related to development (see Section 3.2.1). Impact from auto and/or industrial sources would be concentrated in the Barstow/Victorville and I-15 corridor areas. Under Alternative IV, the greatest effect is anticipated to be equally divided between Barstow and Victorville. However, this effect may be modified with respect to vehicle emission by the fact that Victorville is closer to the urban centers of San Bernardino and Los Angeles, making it a potentially more desirable location for commuters.

Groundwater Resources

Groundwater aquifers, particularly the Mojave River aquifer near Victorville, could suffer additional overdraft due to increased demand resulting from development (see Section 3.2.2.1). Increased demand would result if newly acquired private land is developed for domestic (RES or RUL) or industrial (IND) uses, necessitating higher water use rates. These effects are anticipated to occur near Victorville and Barstow, but may be modified by housing location preferences.

Surface Water Resources

Surface water quality could be degraded by additional pollutant loads to local drainages in Barstow and/or Victorville if development occurs (see Section 3.2.2.2). These increased pollutant and discharge loads are anticipated based on increases in domestic water uses (RES and RUL areas) and on accompanying increase in runoff which contain fertilizers, various pesticides and increased storm runoff over urban areas (e.g., paved areas). Additional runoff would occur in industrial (IND) and commercial (COM) land use category zones.

Paleontological Resources

Consolidation of public lands containing paleontological resources would benefit those resources by facilitating more effective management of contiguous public lands under this alternative. Paleontological resources which are currently undocumented may be included in public lands marked for disposal. Mitigation measures to protect paleontological resources are discussed in Sections 1.3 and 3.2.3.

Specific identified paleontological resources on private land just outside the Rainbow Basin ACEC (northeast side) will remain in private ownership under this alternative, precluding the additional protection afforded by inclusion in a consolidation zone.

Consolidation and retention zone land would be classified as MUC Class L. This MUC classification would result in no changes in management of paleontological resources.

4.4.3 BIOLOGICAL ENVIRONMENT

Wildlife Resources

The limited (MUC Class L) and moderate (MUC Class M) use throughout the consolidated and retention zones would provide an opportunity to better manage wildlife in the project area by protecting habitat.

Land use category consideration (RCN or RL) for consolidation and retention zones respectively, should not impact the Mohave vole. On the other hand, the areas along the Mojave River (approximately 11,366 acres) are designated for public land disposal and may impact the Mohave vole by reducing its habitat. This alternative would potentially limit the Mohave vole to the Harper Dry Lake Area. The habitat for the Mohave ground squirrel would also be reduced under this alternative, and it will only be protected in the consolidation and retention zones. The protected acreages will roughly correlate to the UPA area (see Table 4.2). With the land use categories (RCN or RL) of this alternative, the habitat for other wildlife species, including raptors, is potentially reduced.

Under this landownership pattern, desert tortoise would lose 1,434 acres of habitat in the Fremont-Stoddard crucial habitat area (see Table 4.1). Habitat for the Mohave vole will be threatened if the public land disposal zones are developed on both sides of the Mojave River south of Barstow (11,366 acres).

Alternative IV would result in the addition of 23,680 acres (approximately 86.0% of present BLM holdings) to private holdings (disposal) and a gain of 1,280 acres (approximately 2.4% of present private holdings) to BLM holdings (consolidation) in areas with greater than 250 desert tortoise per square mile. It is assumed that a change to private ownership will result in the loss of tortoise habitat (see Tables 4.7 and 4.8).

Implementation of this alternative would add 52,480 acres (approximately 36.9% of present BLM holdings) to private holdings (disposal) and transfer 49,280 acres (approximately 26.9% of present private holdings) to public holdings (consolidation) in areas supporting 100-250 desert tortoise per square mile.

Plant Resources

Because all of the lands of concern between Victorville and Barstow would be public land disposal zones, Sclerocactus polyancistrus populations in the area would be affected. Likewise, Sclerocactus polyancistrus northwest of Barstow would be in a public land disposal zone.

Eriophyllum mohavense south of Harper Dry Lake would be in a public land disposal zone.

In the Boron Area, Chorizanthe spinosa, Cymopterus deserticola, and Puccinellia parishii would be in a public land disposal zone.

Field studies of individual parcels will be required to document the extent of these affected populations. Mitigation measures may be required for these populations to lessen the impact of loss on these population segments on the overall population of the Mojave Desert.

The UPA will be impacted by changes in landownership and land use categories, resulting in 168,620 acres in consolidation, 105,120 acres in retention, and 211,740 acres in disposal (see Table 4.2). Loss of the acreage in the disposal zones is not anticipated to adversely impact the UPA.

4.4.4 HUMAN ENVIRONMENT

Cultural Resources

Under this alternative, changes in landownership patterns in the consolidation zones would yield an increase of 95 known cultural resource sites over the existing number on public lands (see Table 4.3). In addition, changes would occur in the relative percentages of ownership of several of the identified cultural resource polygons (see Table 4.4). However, the net effect of the change in polygon ownership would be minimal. The increased size of the consolidation zones (187,448 acres) would permit more effective management of a larger number of cultural resource properties through elimination of much of the current checkerboard ownership pattern. Management of cultural resources throughout the equally large retention zones (146,912 acres) would continue to be a problem because of dispersed public land holdings. Disposal of a projected 187,200 acres of public lands into private ownership would result in the loss of protective federal control for an unknown number of cultural resource properties (see Section 1.3).

An increase of lands in the Class L classification would lead to increased protection on public lands in the consolidation and retention

zones. However, disposal and reclassification of a large number of acres (157,000) would result in loss of protective management for an unknown number of cultural resource properties in the disposal zones. These resources would still be protected under regulations noted in Section 1.3.

Designation consideration of private lands within the consolidation zones as Rural Conservation (RCN) and private lands in the retention zones as Rural Living (RL) would provide protection for cultural resource properties located on those lands (see Section 1.3). There would be no change on private lands in the disposal zones where existing land use categories would continue.

Protection of these resources is based on the regulations noted in Section 1.3 and on the dispersed nature of development associated with Rural Conservation and Rural Living designations.

Recreation and Public Access

Overall, long-term access to recreation opportunities would improve due to the consolidation of federal lands, and subsequent management practices. The Calico National Recreation Lands should especially benefit.

Greater restrictions will apply to ORV uses in the consolidation zones that are changed from MUC Class M to MUC Class L. Specifically, competitive events will be restricted under MUC Class L. These restrictions include prohibition of pit, start, finish, and spectator areas, and limit ORV events to approved areas. In MUC Class M areas, events are permitted on existing routes of travel and the above restrictions do not apply. Consolidation should improve future recreational access in both MUC Class L and M areas due to reduced conflicts with private landowners.

Visual and Aesthetic Resources

This alternative will have a positive effect on visual resource management. Larger blocking of lands under federal management facilitates application of sound visual management techniques and is enhanced by single agency management.

Consolidation of lands in the vicinity of Rainbow Basin ACEC will benefit scenic values in and immediately adjacent to the ACEC by placing them under the control of a single, federal management agency.

Socioeconomic Resources

Public land available under this alternative is essentially the same as that for Alternative III. A 20,000 acre area between Barstow and Quartzite, 10,000 acres in the I-15 corridor between Barstow and Victorville,and approximately 30,000 acres east of Edwards Air Force Base would be subject to disposal. Mineral development potential may exist for the area east of Edwards Air Force Base and it could potentially be

utilized for energy (solar) development. Availability of these lands is not anticipated to alter development levels.

Socioeconomically, a minor potential for increased urbanization exists under this alternative. However, interest in development of these areas has been low due to the ample availability of existing private land. Further, development in these areas is constrained more by lack of demand and lack of services (water, sewer, fire protection, etc.) than by lack of developable land. As a consequence, the implementation of this alternative has only a minor potential for influencing urban development. Another factor is that the exchange of land under this alternative would result in the loss of five county borrow sites for road repair materials. Estimated cost to the county to haul aggregate from more remote sites is approximately $25,000 per year.

Together, the lack of increased urban development and the loss of the borrow pits will not amount to a significant socioeconomic impact if this alternative is implemented.

4.4.5 LAND USES AND PATTERNS

Areas of Critical Environmental Concern

Black Mountain ACEC would be in a consolidation zone under Alternative IV. The consolidation zone would include two miles of public land around the ACEC, providing some protection for the resource values of the ACEC.

Eriophyllum ACEC would be in a consolidation zone under Alternative IV, providing a high level of protection for the resource values of the ACEC by consolidating contiguous lands under federal management.

Harper Dry Lake ACEC would be in a consolidation zone under Alternative IV, providing protection of the ACEC resource values by facilitating uniform federal management of surrounding lands. The north, south and west sides are bounded by private land, subjecting the ACEC to some resource value depredation.

Kramer Hills ACEC would be in a retention zone with private property along two of six of the ACEC miles of boundary, which does not promote protection of the resource values in the ACEC. The resource values of the ACEC may be adversely impacted by development of private property in the surrounding area.

Rainbow Basin would be in a consolidation zone under Alternative IV, providing protection for the ACEC resource values by federal management of contiguous lands. Privately owned land will remain within one mile of the ACEC boundary but the proximity is not anticipated to impact the resource values of the ACEC, except on the south side where private land abuts.

Helendale ACEC is located within a disposal zone but public lands in the ACEC would be exempt from exchange. Land use categories in the area of the ACEC include agriculture (AGR), residential (RES), and Rural Living

(RUL). Potentially adverse impacts to the resource values of the ACEC may be experienced as a result of the residential land use category.

Wilderness Study Area

The Black Mountain WSA is within a consolidation zone. Wilderness values will not be impaired. The ability to maintain identified wilderness values in the area would be enhanced by federal jurisdiction and management of all lands within the WSA boundary.

Range and Grazing Resources

Consolidation of the public and private lands would result in better grazing management. Primarily this would come through better control.

This alternative would place the public land in the Bissel, Oak Creek, Warren, Double Mountain, Boron Sheep, and Antelope Valley allotments in the disposal zones and available for trade to the private sector (see Table 4.12). Permittees that strongly depend on these public lands in their livestock operation would be detrimentally impacted. The significance factor to the permittee will be determined by the availability of other federal lease land and cost factors. Over 50 percent of the public land on the Stoddard Mountain, Goldstone, and Superior Valley allotments would remain in retention zones (i.e., under present ownership and management). Over 50 percent of the public land in Harper Dry Lake, Gravel Hills, Shadow Mountains, Monolith Cantil, and Buckhorn Canyon allotments (see Table 4.12) would be in the consolidation zones. Consolidation of the public land should present opportunities for more effective range management activities and could result in range improvement and increased livestock grazing.

In the consolidation zones, private land exists in the Harper Dry Lake, Superior Valley, Gravel Hills, Shadow Mountains, Stoddard Mountain, Buckhorn Canyon, and Monolith Canyon allotments for this alternative (Table 4.12). Except for Harper Dry Lake, Superior Valley, Gravel Hills, and Monolith Cantil allotments, most of the private land on the allotments is in the retention and/or disposal zones. Grazing on private land would be determined by land use and county zoning factors and possibly would not change unless resources are developed.

Federal land in the LTA Project Area under this alternative would increase by about 65,080 acres and about 708 AUMs. The Ridgecrest Resource Area would lose about 7,220 acres and 931 AUMs. The Barstow Resource Area would gain about 72,300 acres and 1,639 AUMs (Table 4.10). Private land gains or losses would be the reverse of that for the federal land.

Livestock grazing would not be affected except for those six allotments in which all the public land is in disposal zones (see Table 4.10). Most of the grazing allotments have Section 15 Land which is based on a land lease requiring two-year notice to be terminated. The forage composition of the vegetation for livestock needs to be evaluated on those allotments in which large acreages are under public or private ownership in consolidation or disposal zones (see Section 1.3).

TABLE 4.12 GRAZING ALLOTMENT RELATIONSHIPS FOR ALTERNATIVE IV

ALLOTMENT	ZONES[1]	LANDOWNERSHIP Federal acres (1000s)	State acres (1000s)	Private acres (1000s)	ANIMAL UNIT MONTHS[2] Federal AUMs	State AUMs	Private AUMs	MUC[3]	LUC[4]
Harper Dry Lake	C	12.4	-	5.1	462	-	191	L	RC
	R	-	-	-	-	-	-	-	-
	D	3.7	-	2.1	138	-	78	U	CNT
Superior Valley	C	50.1	1.9	37.1	671	25	497	L	RC
	R	72.5	-	3.7	972	-	49	M	RL
	D	9.2	-	5.0	124	-	68	U	CNT
Gravel Hills	C	77.1	2.6	78.8	1808	60	1848	L	RC
	R	38.0	.6	23.6	890	15	552	L	RL
	D	-	-	-	-	-	-		
Shadow Mountain	C	19.7	-	5.7	1381	-	397	L	RC
	R	6.6	-	2.5	460	-	174	L	RL
	D	10.2	-	3.7	716	-	256	U	CNT
Goldstone	C								
	R	2.6		.6	165		41	L	CNT
	D								
Stoddard Mountain	C	4.4	-	1.3	46	-	13	L	RC
	R	51.7	-	10.1	542	-	105	M	RL
	D	31.6		10.1	331		105	U	CNT
Buckhorn Canyon	C	9.1	-	1.2	498		64	L	RC
	R	2.8	-	1.4	154		78	M	RL
	D	.9	-	-	43			U	CNT
Monolith Cantil	C	11.1	-	16.0	116	-	166	L	RC
	R	8.1	-	8.2	84		86	L	RL
	D	-	-	2.4	-		25	-	CNT
Boron Sheep	C	-	-	-	-	-	-	-	-
	R	-	-					-	-
	D	11.4	-	27.5	157		379	U	CNT
Bissel	C	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-
	D	4.0	-	-	308			U	CNT
Oak Creek	C	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-
	D	0.16	-		16			U	CNT
Warren	C	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-
	D	0.58	-	-	55			U	CNT
Antelope Valley	C	-	-	-	-	-	-		
	R	-	-	-	-	-	-		
	D	6.5	-	-	529	-	-	U	CNT
Double Mountain	C	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-
	D	0.58	-	-	32	-	-	U	CNT

[1] LTA Zones: C=Consolidation Zones, R=Retention Zones, D=Disposal Zones

[2] AUMs were calculated using the federal acreage and average 5-year AUMs to determine acres per AUM for an allotment. The percentage of federal land was used in each zone to calculate the acres and AUMs for each allotment. The assumption was made that private land would be grazed similarly to federal land. The acres/AUM calculation for federal land was used to calculate the acres and AUMs for private land within each allotment. Calculating AUMs in this manner assumes that the vegetation is similar across the allotment and that the acres/AUM can reasonably be based on 5-year AUM averages.

[3] Multiple Use Classification on Public Land
L (Limited) M (Moderate) U (Unclassified)

[4] Land Use Categories in San Bernardino County
RL (Rural Living) RC (Rural Conservation) CNT (Continued Existing Uses)

Limited (MUC Class L) use classification is proposed for land in consolidation zones on all allotments. Limited use is designated for the retention zones on the Gravel Hills, Shadow Mountain, and Monolith Cantil Allotments. Moderate (MUC Class M) use classification is designated for the retention zones on the Superior Valley, Stoddard Mountain, and Buckhorn Canyon allotments. The remainder is unclassified. Multiple Use Classifications which would exist under this alternative do not exclude grazing and therefore there is no impact.

Consolidation zone private property would be considered for designation as Rural Conservation under San Bernardino County zoning regulations. Retention zone lands would be considered for Rural Living. A Rural Living designation allows housing development of land parcels as small as 2.5 acres, potentially obstructing or eliminating access to allotments and altering available forage bases. A Rural Conservation designation requires 40 acres per house and is not anticipated to result in access problems.

Agricultural Resources

Changes in landownership and subsequent consideration for designation under county land use categories could result in impact to availability of land suitable for agricultural development. Current overdraft of the Mojave River Aquifer precludes additional agricultural development based on water from that source. Available water is an economic prerequisite for agricultural operations. Individual perceptions will dictate feasibility of agricultural operations. Approximately 13,391 acres of public land identified for disposal would be within the San Bernardino County Agricultural land use category (see Table 4.5). MUC Class M, L, C, and I prohibit agricultural uses on public land (except livestock grazing).

Geology and Minerals

Hundreds of mining claims are located in the disposal zones. Over 200 claims are located in the Oro Grande area. Land exchange would be subject to prior rights of mining claimants (see Section 1.3). Since conveyance of the mineral estate would not include mining claims, operation under the 1872 Mining Law would not be affected.

This alternative would eliminate five county borrow sites for road repair materials. Obtaining aggregate from more remote sites would cost the county an estimated $25,000 per year.

Military Testing and Training Requirements

By favoring consolidation of DoD priority areas under the George AFB ingress corridor, the supersonic corridor, and portions of the PIRA, this alternative allows for protection of public health and safety concerns and adequately protects the Air Force's missions conducted within the boundaries of the LTA Project Area against future encroachment, thereby assuring minimal impact to the corridors and thus the security of the nation.

4.5 ALTERNATIVE V

4.5.1 RESOURCES NOT IMPACTED BY THE ALTERNATIVE

Resources eliminated from discussion under Alternative V include those eliminated for all alternatives: Native American values; threatened and endangered plants; utility corridors and access; soils; and noise.

4.5.2 PHYSICAL ENVIRONMENT

Physical environment impacts are a consequence of development activities that may result from changes in landownership patterns.

Air Resources

Air resources may be degraded as a result of changes in landownership pattern and land use categories due to increased auto or industrial emissions. Because a significant amount of air pollution in the project area results from out of basin import, the effect is expected to be minimal and related to development (see Section 3.2.1). Impact from auto and/or industrial sources would be concentrated in the Barstow/Victorville and I-15 corridor areas. Under Alternative V, the greatest effect is anticipated to be near Barstow (see Section 3.2.1). However, this effect may be modified with respect to vehicle emissions by the fact that Victorville is closer to the urban centers of San Bernardino and Los Angeles, making it a potentially more desirable location for commuters.

Groundwater Resources

Groundwater aquifers, particularly the Mojave River Aquifer may suffer additional overdrafting due to increased demand resulting from development (see Section 3.2.2.1). Increased demand will result if newly acquired private land is developed for domestic (RUL) or industrial (IND) uses, necessitating higher water use rates. These effects are anticipated to occur primarily near Barstow, but may also be modified by housing location preferences.

Surface Water Resources

Surface water quality could be degraded by additional pollutant loads discharged to local drainages in Barstow and/or Victorville if development occurs (see Section 3.2.2.2). These increased pollutant and discharge loads are anticipated based on increases in domestic water uses (RES and RUL areas) and an accompanying increase in runoff which contains fertilizer, various pesticides and increased storm runoff over urban areas (e.g., paved areas). Additional runoff would occur in industrial (IND) and commercial (COM) land use category areas.

Paleontological Resources

Paleontological resources occurring on public lands to be consolidated, and to a lesser extent those in retention zones, would

benefit from more effective management facilitated by contiguous public ownership. Conversely, some presently undocumented paleontological resources may be included in public lands marked for disposal. Mitigation measures for paleontological resources are discussed in Sections 1.3 and 3.2.3.

Continuation of existing multiple use classifications would result in no change for management of paleontological resources, except that public lands would be consolidated within the classifications. Acquired holdings would be designated as MUC Class L, thereby affording additional protection to paleontological resources.

4.5.3 BIOLOGICAL ENVIRONMENT

Wildlife Resources

For wildlife, this alternative provides some protection for the unique habitat near Harper Dry Lake. This protection is a result of the consolidation zones designation and the Harper Dry Lake ACEC.

Alternative V would result in the addition of 2,624 acres (approximately 9.5% of present BLM holdings) to private holdings (disposal) and a gain of 1,280 acres (approximately 2.4% of present private holdings) to BLM holdings in areas (consolidation) with greater than 250 desert tortoise per square mile. It is assumed that a change to private ownership will result in the loss of tortoise habitat (see Tables 4.7 and 4.8).

Implementation of this alternative would add 5,760 acres (approximately 9.0% of present BLM holdings) to private holdings (disposal) and transfer 74,880 acres (approximately 40.8% of present private holdings) to BLM holdings (consolidation) in areas supporting 100-250 desert tortoise per square mile. Implementation of this alternative would result in the least amount of desert tortoise habitat loss in areas supporting greater than 250 per square mile. It also results in gain of manageable habitat containing 100-250 desert tortoise per square mile.

Under this alternative, the desert tortoise Fremont-Stoddard crucial habitat area would not lose any acreage to public land disposal. Consolidation and retention zone acreages should provide some protection for the species (see Table 4.1).

The Mohave vole would be protected in the Harper Dry Lake area and to a lesser extent in the Mojave River area. Loss of habitat in the Mojave River area would be approximately 5,213 acres. The Mohave ground squirrel would have stable habitat areas under both consolidation and retention zones. This acreage will be roughly correlated to the UPA area (see Table 4.2).

Plant Resources

Sclerocactus polyancistrus populations occur between George AFB and Barstow, and those northwest of Barstow would be on retention zone lands.

Eriophyllum mohavense and Chorizanthe spinosa occur on retention zone lands. The UPA will be impacted by changes in landownership and use, resulting in 272,800 acres being in consolidation, 146,980 acres in retention zones, and 71,330 acres in disposal zones. Loss of the acreage in the disposal zones is not anticipated to adversely affect the UPA (see Table 4.2).

4.5.4 HUMAN ENVIRONMENT

Cultural Resources

Maximization of acreage in the consolidation zones under this alternative would result in the largest shift of known cultural resource sites from private to public ownership, a net change of 118 properties (see Table 4.3). The number of presently unidentified cultural resource sites in these zones is unknown but anticipated to be significant. Changes in relative percentages of landownership for the identified cultural resource polygons would be fairly equal, with a slight shift toward more public land holdings of polygon acreage (see Table 4.3). The large consolidation zones (353,587 acres) would also provide for maximum beneficial management of cultural resources in the landownership pattern issue because of contiguous holdings. Correspondingly, minimization of public lands in the retention zones (146,912 acres) would lessen management problems associated with dispersed land holdings. Disposal of only 66,733 acres would probably decrease the potential for losing protective control of significant cultural resources. Resources in the disposal zones would be protected under the guidelines noted in Section 1.3.

Designation of the large consolidation zones as MUC Class L would provide priority protection for significant cultural resources on those public lands. Designation of public lands in retention zones as MUC Class L would provide for similar protection, although the acreage in those zones would be minimized.

Designation consideration of private lands in the consolidation and retention zones as RCN would provide for maximum protection of cultural resources under county land use categories. This benefit is based on the dispersed nature of dwellings allowed in RCN areas.

Recreation and Public Access

From a recreation standpoint, this alternative has the most beneficial effect for most recreational uses. This effect is due to the largest consolidation area (353,587 acres). This positive effect is confined to this issue. The alternative serves to maintain or greatly improve recreation use opportunities due to long-term access benefits and reduction of conflicts between private landowners and recreation users on public land.

Greater restrictions will apply to ORV uses in the consolidation zones that are changed from MUC Class M to MUC Class L. Specifically, competitive events will be restricted under MUC Class L. These

restrictions include prohibition of pit, start, finish, and spectator areas, and limit ORV events to approved areas. In MUC Class M areas, events are permitted on existing routes of travel and the above restrictions do not apply. Consolidation should improve future recreational access in both MUC Class L and M areas due to reduced conflicts with private landowners. This alternative would benefit recreational users by providing large, contiguous areas under public management for such activities as hiking, photography and other non-vehicle oriented uses.

Visual and Aesthetic Resources

Alternative V will have a positive effect on the management of visual resources in the project area. The greater the extent of contiguous public land blocks, the more positive the effect. Application of sound visual resource management techniques is best applied to these large blocks of land under single ownership. Scenic lands in the immediate vicinity of Rainbow Basin ACEC will be consolidated into federal (public) ownership. This protection would be a positive benefit to both the ACEC and the visual resource.

Socioeconomic Resources

Socioeconomically, no potential for increased urbanization exists under this alternative. As a consequence, the implementation of this alternative has only a very minor potential for influencing urban development. Another factor is that the exchange of public lands under this alternative would result in the loss of five county borrow pits for road repair materials. Estimated cost to the county of hauling aggregate from more remote sites is $25,000 per year.

This alternative provides for no additional private land. The quantity of unclassified lands available for disposal review is reduced over the existing situation (Alternative I). Lack of large, contiguous blocks of land available for private development may retard development.

Together, the lack of increased urban development and the loss of the borrow pits will not amount to a significant socioeconomic impact if this alternative is implemented.

4.5.5 LAND USES AND PATTERNS

Areas of Critical Environmental Concern

Black Mountain ACEC is entirely in a consolidation zone under Alternative V, providing the resource values of the ACEC with a high degree of protection as a result of federal management of a large area surrounding the ACEC. No private land would exist within several miles of the ACEC boundaries.

Eriophyllum ACEC is entirely within a consolidation zone and is protected for several miles on all sides. This protection would result as a function of the consolidated management capability.

Harper Dry Lake ACEC would be entirely within a consolidation zone under Alternative V. Disposal zone land would abut the ACEC boundary on the western and southern boundaries, potentially impacting the resource values of the ACEC.

Kramer Hills ACEC would be in a consolidation zone under Alternative V but would have two of its six miles of boundary adjacent to retention zone private land.

Rainbow Basin ACEC would be entirely within a consolidation zone. Consolidation, through enhanced protection, would provide benefits to the resource values of the ACEC, particularly scenic values.

Helendale ACEC would be in a retention zone. This designation does not promote protection of resource values in the ACEC. Disposal lands adjacent to the ACEC are categorized as agricultural (AGR), residential (RES), and Rural Living (RUL). Residential land use categories would impact resource values of the ACEC but agricultural and Rural Living would not.

Wilderness Study Area

Black Mountain WSA is within a consolidation zone. Wilderness values will not be impaired. The ability to maintain identified wilderness values in the area would be enhanced by federal ownership and management of all lands within the WSA boundary.

Range and Grazing Resources

Consolidation of the public and private lands should result in better grazing management. Primarily this would come through better control.

The effect of this alternative would place the public land in the Bissel, Oak Creek, Warren, Double Mountain, and Antelope Valley allotments in the disposal zones and available for trade to the private sector (see Table 4.13). Permittees that strongly depend on these public lands in their livestock operation would be detrimentally impacted. The significance factor to the permittee will be determined by the availability of other federal lease land and cost factors. Over 50 percent of the public land on the Stoddard Mountain, and Boron Sheep allotments would remain in the retention zones (i.e., under present ownership and management). Over 50 percent of the public land in the Harper Dry Lake, Superior Valley, Gravel Hills, Shadow Mountains, Monolith Cantil, and Buckhorn Canyon allotments would be in the consolidation zones (i.e., public ownership). Consolidation of the public land should present opportunities for more effective range management activities and could result in range improvement and increased livestock grazing.

TABLE 4.13 GRAZING ALLOTMENT RELATIONSHIPS FOR ALTERNATIVE V

ALLOTMENT	ZONES[1]	LANDOWNERSHIP			ANIMAL UNIT MONTHS[2]			MUC[3]	LUC[4]
		Federal acres (1000s)	State acres (1000s)	Private acres (1000s)	Federal AUMs	State AUMs	Private AUMs		
Harper Dry Lake	C	12.4	-	5.1	462	-	191	L	RC
	R	3.7	-	2.1	138	-	78	L	RC
	D							-	-
Superior Valley	C	125.2	1.9	43.1	1678	25	577	L	RC
	R	6.6	-	2.7	88	-	37	L	RC
	D							-	-
Gravel Hills	C	115.1	3.2	102.4	2698		2400	L	RC
	R							-	-
	D	-	-	-	-	-	-	-	-
Shadow Mountain	C	26.3		3.9	276	-	40	L	RC
	R	57.9	-	12.4	607	-	130	L	RC
	D	3.5	-	5.1	37	-	54	U	CNT
Goldstone	C	2.6		.6	165		41	L	CNT
	R								
	D								
Stoddard Mountain	C	26.3	-	3.9	276	-	40	L	RC
	R	57.9	-	12.4	607	-	130	L	RC
	D	3.5		5.1	37		54	U	CNT
Buckhorn Canyon	C	11.9	-	2.6	653		143	L	RC
	R							-	-
	D	.9	-	-	49			U	CNT
Monolith Cantil	C	19.2	-	24.5	200	-	255	L	RC
	R							-	-
	D	-	-	2.1	-		22	-	CNT
Boron Sheep	C	3.1	-	5.5	42	-	76	L	RC
	R	6.4	-	12.1	88		167	L	RC
	D	1.9	-	9.9	27		136	U	CNT
Bissel	C	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-
	D	4.0	-	-	308			U	CNT
Oak Creek	C	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-
	D	0.16	-		16			U	CNT
Warren	C	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-
	D	0.58	-	-	55			U	CNT
Antelope Valley	C	-	-	-	-	-	-		
	R	-	-	-	-	-	-		
	D	6.5	-	-	529	-	-	U	CNT
Double Mountain	C	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-
	D	0.58	-	-	32	-	-	U	CNT

[1] LTA Zones: C=Consolidation Zones, R=Retention Zones, D=Disposal Zones

[2] AUMs were calculated using the federal acreage and average 5-year AUMs to determine acres per AUM for an allotment. The percentage of federal land was used in each zone to calculate the acres and AUMs for each allotment. The assumption was made that private land would be grazed similarly to federal land. The acres/AUM calculation for federal land was used to calculate the acres and AUMs for private land within each allotment. Calculating AUMs in this manner assumes that the vegetation is similar across the allotment and that the acres/AUM can reasonably be based on 5-year AUM averages.

[3] Multiple Use Classification on Public Land
L (Limited) M (Moderate) U (Unclassified)

[4] Land Use Categories in San Bernardino County
RL (Rural Living) RC (Rural Conservation) CNT (Continued Existing Uses)

In the consolidation zones, private land exists in the Harper Dry Lake, Superior Valley, Gravel Hills, Shadow Mountains, Goldstone, Stoddard Mountain, Buckhorn Canyon, Boron Sheep, and Monolith Cantil allotments (see Table 4.13). Only Stoddard Mountain, Monolith Cantil, and Boron Sheep allotments have private land in the disposal zones. Grazing on private land would be determined by land use and county zoning factors and would not change unless resources are developed.

Federal land in the LTA Project Area under this alternative would increase by about 170,120 acres and about 2,825 AUM. The Ridgecrest Resource Area would gain 16,280 acres while losing 636 AUMs. The Barstow Resource Area would gain about 153,840 acres and 3,461 AUM. Private land gains or losses would be the reverse of that for the federal lands.

Livestock grazing under this alternative would not be affected except for those five allotments in which all the public land is in disposal zones (see Table 4.10). Most of the grazing allotments have Section 15 land which is based on a land lease requiring two-year notice to be terminated. The forage composition of the vegetation for livestock needs to be considered on those allotments in which large acreages are in public or private ownership in consolidation or disposal zones. Consolidation zone private property would be considered for designation as Rural Conservation under San Bernardino County zoning regulations. Retention zone lands would be considered for Rural Living. A Rural Living designation allows housing development of land parcels as small as 2.5 acres, potentially obstructing or eliminating access to allotments and altering available forage bases. A Rural Conservation designation requires 40 acres per house and is not anticipated to result in access problems.

Agricultural Resources

Changes in landownership pattern may result in impact to availability of land suitable for agricultural development. Current overdraft of the Mojave River aquifer precludes additional agricultural development based on water from that source. Available water is an economic prerequisite for agricultural operations. Individual perceptions will dictate feasibility of agricultural operations. Agricultural development would be affected by changes in landownership patterns where private land is subsequently zoned to allow agricultural activity. Approximately 10,680 acres of public land identified for disposal would be within the San Bernardino County Agricultural land use category (see Table 4.5). MUC CLASS M, L, C, and I prohibit agricultural uses on public land (except livestock grazing).

Geology and Minerals

Hundreds of mining claims are located in disposal zones. Over 100 claims are located in the areas of Mojave, Bear Canyon, Soledad Mountain and Willow Springs. Land exchanges will be subject to prior rights of mining claimants (see Section 1.3). Since conveyance of the mineral estate would not include mining claims, operation under the 1872 Mining Law would not be affected. This alternative would eliminate a county borrow site

near El Mirage for road repair materials currently under application by the county.

Consolidation of public lands over areas which contain mineral resources or have potential for other energy source development should be benefited by providing for exploration over large contiguous areas controlled by a single, federal land management agency with no private land intermixed.

Structural height restrictions in the supersonic corridors may impact future mine development by altering location of structures required for mine operations.

Military Testing and Training Requirements

Military testing and training requirements would be well served by this alternative. All DoD important resource values would be included in the consolidation zones to the maximum extent possible. Consolidation would include the supersonic corridor, the PIRA and portions of the George AFB ingress corridor. Alternative V would alleviate most of the public health and safety concerns and provide substantial protection against encroachment on the priority use areas for the DoD facilities, airspaces, and test corridors within the LTA Project Area, thereby insuring minimal impact to the corridors, and thus to the security of the nation.

4.6 ALTERNATIVE VI (PROPOSED ACTION)

4.6.1 RESOURCES NOT IMPACTED BY THE ALTERNATIVE

Resources eliminated from discussion under Alternative VI include those eliminated for all alternatives: Native American values; threatened and endangered plants; utility corridors and access; soils; and noise.

4.6.2 PHYSICAL ENVIRONMENT

Physical environment impacts are a consequence of development activities that may result from changes in landownership patterns.

Air Resources

Air resources in the project area may be degraded as a result of changes in landownership pattern and land use categories due to increased auto or industrial emissions. Because a significant amount of current air pollution in the project area results from out of basin import, the effect is expected to be minimal and related to development (see Section 3.2.1). Impact from auto and/or industrial sources would be concentrated in the Barstow/Victorville and I-15 corridor areas. Under Alternative VI, the greatest effect is anticipated to be near Barstow (see Section 3.2.1). However, this effect may be modified with respect to vehicle emission by the fact that Victorville is closer to the urban centers of San Bernardino and Los Angeles, making it a potentially more desirable location for commuters.

Groundwater Resources

Groundwater aquifers, particularly the Mojave River Aquifer, could suffer additional overdraft due to increased demand resulting from development (see Section 3.2.2.1). Increased demand would result if newly acquired private land is developed for domestic (RES or RUL) or industrial (IND) uses, necessitating higher water use rates. These effects are anticipated to occur primarily near Barstow, but may be modified by housing location preferences.

Surface Water Resources

Surface water quality could be degraded by additional pollutant loads to local drainages in Barstow and/or Victorville if development occurs (see Section 3.2.2.2). These increased pollutant and discharge loads are anticipated based on increases in domestic water uses (RES and RUL areas) and an accompanying increase in runoff which contain fertilizers, various pesticides, and increased storm runoff over urban areas (e.g., paved areas). Additional runoff would occur in industrial (IND) and commercial (COM) land use category areas.

Paleontological Resources

Consolidation of public landholdings would facilitate more effective

management and protection of paleontological resources because of contiguous ownership of public lands. Some presently unidentified paleontological resources may be included on public lands targeted for disposal (see Section 3.2.3). Those resources would be protected under regulations noted in Section 1.3.

4.6.3 BIOLOGICAL ENVIRONMENT

Wildlife Resources

This alternative would result in the loss of 1,657 acres in the Fremont-Stoddard desert tortoise crucial habitat area (see Table 4.1). Mohave vole would continue to be present at Harper Dry Lake and on the southern end of the Mojave River below Victorville. The Mohave ground squirrel would have its habitat greatly reduced by loss of habitat in the public land disposal zones, but would have protected habitat in the consolidation and retention zones in areas roughly correlated to the UPA acreage (see Table 4.2).

Alternative VI would result in the addition of 14,366 acres (approximately 52.1% of present BLM holdings) to private holdings (disposal) and a gain of 1,280 acres (approximately 2.4% of present private holdings) to BLM holdings (consolidation) in areas with greater than 250 desert tortoise per square mile. It is assumed that a change to private ownership will result in the loss of tortoise habitat (see Table 4.7 and 4.8).

Implementation of this alternative would add 45,984 acres (approximately 32.4% of present BLM holdings) to private holdings (disposal) and transfer 52,480 acres (approximately 28.6% of present private holdings) to BLM holdings (consolidation) in areas supporting 100-250 desert tortoise per square mile.

Alternative VI preserves wildlife habitat in the consolidation zones east and north of Edwards AFB. It is, however, the smallest area of wildlife habitat of all the alternatives.

Plant Resources

Sclerocactus polyancistrus southwest of Barstow occurs on public land in a disposal zone. Sclerocactus polyancistrus northwest of Barstow, occurs on public land in a disposal zone. Sclerocactus polyancistrus east of George AFB would be in a retention zone. Eriophyllum mohavense south of Harper Dry Lake is on public land in a disposal zone. Chorizanthe spinosa at Boron occurs on retention zone lands.

Mitigation measures may be required for the populations of concern to lessen the impact of these losses on the overall populations and species distribution in the Mojave Desert. Field studies of individual land parcels will be required to document the impact of these affected populations.

The UPA will be impacted by changes in landownership (see Table 4.2) and use, resulting in 148,540 acres in consolidation, 179,560 acres in the retention zones, and 157,100 acres in the disposal zones. Loss of the acreage in the disposal zones is not anticipated to adversely impact the UPA.

4.6.4 HUMAN ENVIRONMENT

Cultural Resources

In the proposed alternative, about 225 known cultural resource sites would be located on lands within the consolidation and retention zones, an increase of 97 sites over the existing situation (see Table 4.3). Based on the maximized acreage included in the consolidation zones, it is probable that a large number of presently unidentified cultural resource sites will be located within these zones. Changes in relative percentages of landownership for the identified cultural resource polygons would be fairly even, with a slight shift toward increased public ownership of lands situated in the polygons. The large size of the consolidation zones (264,288 acres) would greatly increase the potential for more effective management of cultural resource properties due to the elimination of the checkerboard ownership pattern and dispersed tracts of public land. Minimization of the acreage in the retention zones (124,544) would also lessen the problem of resource management for dispersed public land holdings in these zones. Maximization of acreage in the disposal zones (132,768 acres) would increase the likelihood of transfer of cultural resource properties from public to private ownership. Presently, the number of known and potential cultural resource sites in disposal zones is unknown. These resources would be protected under regulations noted in Section 1.3.

Designation consideration of private lands within the consolidation zones as Rural Conservation (RCN) and private lands in the retention zones as Rural Living (RL) would provide protection for cultural resource properties located on those lands (see Section 1.3). There would be no change on private lands in the disposal zones where existing land use categories would continue.

Protection of these resources is based on the regulations noted in Section 1.3 and on the dispersed nature of development associated with Rural Conservation and Rural Living designations.

Recreation and Public Access

Overall, long-term access to recreation opportunities would improve due to the consolidation of federal lands, and subsequent management practices.

Greater restrictions will apply to ORV uses in the consolidation zones that are changed from MUC Class M to MUC Class L. Specifically, competitive events will be restricted under MUC Class L. These restrictions include prohibition of pit, start, finish, and spectator

areas, and limit ORV events to approved areas. In MUC Class M areas, events are permitted on existing routes of travel and the above restrictions do not apply. Consolidation should benefit recreational uses by improving future recreational access in both MUC Class L and M areas due to reduced conflicts with private landowners.

Visual and Aesthetic Resources

Alternative VI will have a positive effect on the management of visual resources in the project area. The greater the extent of contiguous public land blocks, the more positive the effect. Application of sound visual resource management techniques is best applied to large blocks of land under single ownership. Scenic lands in the immediate vicinity of Rainbow Basin ACEC will be consolidated into federal ownership. This protection would be a positive benefit to both the ACEC and the visual resources.

Socioeconomic Resources

The potential for increased urbanization exists under this alternative. Availability of private land in close proximity to urban centers (Barstow and Victorville) and the resultant economic stimulus would impact the local economy by promoting growth. Socioeconomic impact in the Barstow area may be reduced relative to Victorville as a result of the closer proximity of Victorville to the urban centers of San Bernardino and Los Angeles, making it a potentially more desirable location for commuters.

Additional lands available for development under Alternative VI are similar to those areas available under Alternatives III and IV. Approximately 20,000 acres northwest of Barstow, 10,000 acres in the I-15 corridor between Barstow and Victorville, and approximately 30,000 acres east of Edwards Air Force Base. Little interest has been expressed in the development of these lands. The potential for energy (solar) development is possible in the lands east of Edwards Air Force Base. There is no current mineral development and little mineral exploration currently.

The exchange of land under this alternative would result in the loss of three county borrow sites for road repair materials. The estimated cost to the county of hauling from more remote sites is $15,000 per year.

4.6.5 LAND USES AND PATTERNS

Areas of Critical Environmental Concern

Black Mountain ACEC would be in a consolidation zone and completely surrounded by public land for several miles under Alternative VI. Consolidation would benefit the resource values of the ACEC by facilitating uniform management of public lands.

Eriophyllum ACEC would be in a retention zone under Alternative VI which does not promote protection of resource values. Private land would remain on three sides of the ACEC, potentially impacting the resource values of the ACEC.

The Harper Dry Lake ACEC is in a disposal zone under this alternative. No ACEC land would be exchanged. The area abuts a consolidation zone on two sides and would derive some resource protection from that status. Potential private development in the disposal zone could impact resource values.

Kramer Hills ACEC would be in a retention zone under Alternative VI, which does not promote protection of resource values. Private lands would remain on two of the six miles of the ACEC boundary, potentially resulting in impact to the resource values of the ACEC.

Rainbow Basin ACEC would be in a consolidation zone under Alternative VI, providing protection for resource values as a result of uniform federal management of contiguous lands.

Helendale ACEC would be in a retention zone under Alternative VI, which does not promote protection of resource values. Private lands adjacent to the ACEC are zoned Residential (RES), agricultural (AGR), and Rural Living (RUL). The Rural Living and agricultural designation would not impact ACEC resource values but a residential designation would potentially impact the resource values of the ACEC.

Wilderness Study Area

The Black Mountain WSA is within a consolidation zone for this alternative. Wilderness values will not be impaired. The ability to maintain identified wilderness values in the WSA would be enhanced by federal ownership and management of lands within the WSA boundary.

Range and Grazing Resources

Consolidation of the public and private lands should result in better grazing management. Primarily this would come through better control.

The effect of this alternative would place the public land in the Bissel, Oak Creek, Warren, Double Mountain, and Antelope Valley allotments in disposal zones and available for trade to the private sector (see Table 4.14). Permittees that strongly depend on these public lands in their livestock operation would be detrimentally impacted (see Table 4.10). The significance factor to the permittee will be determined by the availability of other federal lease land and cost factors. Over 50 percent of the public land on the Stoddard Mountain and Boron Sheep allotments would remain in retention zones (i.e., under present ownership and management). Over 50 percent of the public land in the Harper Dry Lake, Superior Valley, Goldstone, Gravel Hills, Monolith Cantil, and Buckhorn Canyon allotments would be in consolidation zones (i.e., public ownership). Consolidation of the public land should present opportunities for more effective range management activities and could result in range improvement and increased livestock grazing.

In consolidation zones, there is private land in the Harper Dry Lake, Superior Valley, Gravel Hills, Shadow Mountains, Stoddard Mountain, and

TABLE 4.14 GRAZING ALLOTMENT RELATIONSHIPS FOR ALTERNATIVE VI

ALLOTMENT	ZONES[1]	LANDOWNERSHIP			ANIMAL UNIT MONTHS[2]			MUC[3]	LUC[4]
		Federal acres (1000s)	State acres (1000s)	Private acres (1000s)	Federal AUMs	State AUMs	Private AUMs		
Harper Dry Lake	C	12.4	-	5.1	462	-	191	L	RC
	R							-	-
	D	3.7		2.1	138		78	U	-
Superior Valley	C	114.7	1.9	39.4	1537	25	528	L	RC
	R	6.6	-	1.8	88	-	25	M	RL
	D	10.5		4.6	141		61	U	CNT
Gravel Hills	C	90.9	3.2	80.9	2131	75	1836	L	RC
	R	24.2		21.5	567		504	L	RL
	D							-	-
Shadow Mountain	C	14.6		5.8	1023	-	405	L	RC
	R	11.7	-	6.0	818	-	422	U/M	RL
	D	10.2	-		716	-		CNT	CNT
Goldstone	C	2.6		.6	165		41	L	RL
	R								
	D								
Stoddard Mountain	C	4.4	-	1.3	46	-	13	L	RC
	R	51.7	-	10.1	542	-	1	M	RL
	D	31.6		10.1	331		105	U	CNT
Buckhorn Canyon	C	8.2	-		449			L	-
	R	3.7		2.6	204		143	M	RL
	D	.9	-	-	49			U	-
Monolith Cantil	C	19.2	-	24.5	200	-	255	L	RC
	R							-	-
	D	-	-	2.1	-		22	-	CNT
Boron Sheep	C								
	R	9.5	-	13.5	133		186	U	RL
	D	1.9	-	14.0	27		193	-	CNT
Bissel	C	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-
	D	4.0	-	-	308			U	CNT
Oak Creek	C		-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-
	D	0.16	-		16			U	CNT
Warren	C	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-
	D	0.58	-	-	55			U	CNT
Antelope Valley	C	-	-	-	-	-	-		
	R	-	-	-	-	-	-		
	D	6.5	-	-	529	-	-	U	CNT
Double Mountain	C	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-
	D	0.58	-	-	32	-	-	U	CNT

[1] LTA Zones: C=Consolidation Zones, R=Retention Zones, D=Disposal Zones

[2] AUMs were calculated using the federal acreage and average 5-year AUMs to determine acres per AUM for an allotment. The percentage of federal land was used in each zone to calculate the acres and AUMs for each allotment. The assumption was made that private land would be grazed similarly to federal land. The acres/AUM calculation for federal land was used to calculate the acres and AUMs for private land within each allotment. Calculating AUMs in this manner assumes that the vegetation is similar across the allotment and that the acres/AUM can reasonably be based on 5-year AUM averages.

[3] Multiple Use Classification on Public Land
L (Limited) M (Moderate) U (Unclassified)

[4] Land Use Categories in San Bernardino County
RL (Rural Living) RC (Rural Conservation) CNT (Continued Existing Uses)

Monolith Cantil allotments (Table 4.14). Stoddard Mountain, Shadow Mountains, Buckhorn Canyon, and Boron Sheep allotments have nearly 50 percent or greater private land on the allotments in the disposal zones. Grazing on private land would be determined by land use and county zoning factors and would not change unless resources are developed.

Federal land in the LTA Project Area under this alternative would increase by about 6,980 acres and about 987 AUM. The Ridgecrest Resource Area would gain about 10,780 acres while losing 712 AUM. The Barstow Resource Area would gain about 76,200 acres and about 1,699 AUM. Private land gains or losses would be the reverse of that for the federal land.

Livestock grazing under this alternative would not be affected except for those five allotments in which all the public land is in disposal zones (see Table 4.10). Most of the grazing allotments have Section 15 Land which is based on a land lease requiring two-year notice to be terminated. The forage composition of the vegetation for livestock needs to be considered on those allotments in which there are large acreages in public or private ownership in consolidation or disposal zones (see Section 1.3).

The portion of the allotments proposed for consolidation is recommended for a Rural Living (RUL) designation under San Bernardino County zoning. The remaining portions of the allotments are to continue under existing land use categories. Impact on grazing allotments under a Rural Living designation may be significant depending on location and other uses. A Rural Living designation allows housing development on land parcels as small as 2.5 acres, potentially obstructing or eliminating access to allotments and altering available forage bases.

Agricultural Resources

Changes in landownership and subsequent consideration for designation under county land use categories could result in impact to availability of land suitable for agricultural development. Current overdraft of the Mojave River aquifer precludes additional agricultural development based on water from that source. Available water is an economic prerequisite for agricultural operations. Individual perceptions will dictate feasibility of agricultural operations. Approximately 10,361 acres of public land identified for disposal would be within the San Bernardino County Agricultural land use category (see Table 4.5). MUC Class M, L, C, and I prohibit agricultural uses on public land (except livestock grazing).

Geology and Minerals

Hundreds of mining claims are located in disposal zones; with 50 in the Iron Mountains, and 110 in the northern Shadow Mountains. Land exchange will be subject to prior rights of mining claimants (see Section 1.3). Since conveyance of the mineral estate would not include mining claims, operation under the 1872 Mining Law would not be affected. This alternative would eliminate three county borrow sites for road repair materials.

Consolidation of public lands over areas which contain mineral resources or have potential for other energy source development should be benefited. The benefit is provided by facilitating exploration over large contiguous areas controlled by a single, federal land management agency with no private land intermixed.

Structural height restrictions in the supersonic corridors may impact future mine development by altering location of structures required for mine operations.

Military Testing and Training Requirements

Military testing and training requirements would be well served by this alternative. The supersonic corridor and a portion of PIRA would be in a consolidation zone, thus providing a high degree of protection for the Air Force mission at Edwards AFB. However, the most critical portion of the George AFB ingress corridor would be in a retention zone, thus not eliminating future encroachments conflicts. Most of the public health and safety concerns would be well served by this alternative; except for the George AFB ingress corridor. If the ingress corridor can no longer be used, any landing capability into George AFB would be lost. This could then result in the closing down of the base itself.

4.7 SIGNIFICANT IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES OR ENVIRONMENTAL CHANGES

Presently known and unknown cultural resources located on public land in disposal zones for each alternative could lose the protection of federal management, potentially resulting in the loss of some archaeological and historical data. However, sites transferred to private ownership would fall under protective state and county regulations noted in Section 1.3. Some paleontological resource localities may be transferred to private ownership also. In all instances, mitigation would be required and completed.

All action alternatives would result in some loss of desert tortoise habitat both in the Fremont-Stoddard crucial habitat areas and in the LTA Project Area in general. These impacts would be partially offset by acquisition of additional contiguous federal lands, resulting in management practices more favorable to desert tortoise than is now possible with the checkerboard landownership pattern. In the area around Harper Dry Lake, loss of public land in the disposal zones would reduce the extent of land not subject to development. Development of these areas may impact the bald eagle (and potentially other wildlife species) by altering the protected area around Harper Dry Lake.

Private development of the area along the Mojave River would cause a loss of habitat for the Mohave vole. Private development of lands in disposal zones would reduce habitat for the Mohave ground squirrel.

Mineral resources not determined to be valuable at the time of an exchange may be lost when county zoning or private development inhibits or prohibits future development when economic conditions are favorable for development.

4.7.1 SHORT-TERM VERSUS LONG-TERM PRODUCTIVITY

Implementation of any alternative except the No Action alternative would result in short-term changes in the use of the environment. These changes would result as properties are exchanged, new uses are established, and old uses abandoned (e.g., development of housing areas in land previously used for livestock grazing). The magnitude of the impact is related to the amounts of land exchanged over time and the timing of the exchanges. In other words, if a relatively small amount of land is exchanged over a long period of time, impacts will be different than if large areas of land are exchanged simultaneously. An additional aspect of the impact is the degree of difference between the prior use and the subsequent use. A lesser impact would be anticipated for example if a particular area previously used for grazing became a Rural Conservation housing area than if it became a Commercial category area.

Changes in multiple use classification should not significantly impact long-term uses of the environment. Some uses (e.g., ORV use) would be altered in areas where existing MUC Class M lands are redesignated to MUC

Class L lands, reducing ORV opportunities. These changes would improve overall recreation access.

Changes in land use categories would alter short-term uses (e.g., housing development, where areas are designated Rural Living or Rural Conservation, precluding development of more than one house per 2.5 or 40 acres, respectively. Any changes in land use categories must be approved by the San Bernardino County Board of Supervisors prior to implementation.

Public health and safety designations would influence development in those areas with a SNOD (Safety Noise Overlay Designation), potentially altering development patterns.

4.7.2 IRRETRIEVABLE COMMITMENT OF RESOURCES

Selection of any alternative except the No Action alternative would result in commitment of, and potentially irreversible loss of, some resource values (e.g., wildlife habitat, desert tortoise habitat) currently located on public land.

Changes in landownership patterns would potentially shift living patterns and development of housing to existing areas (e.g., Barstow and Victorville), resulting in changes in transportation uses and altering fuel consumption.

4.8 SHORT-TERM USES VERSUS LONG-TERM PRODUCTIVITY OF THE PROPOSED PROJECT

Environmental effects of any alternative except the No Action alternative include: 1) some loss of existing desert tortoise habitat; 2) consolidation of some areas of desert tortoise habitat under public land management; 3) loss of public access to lands in the disposal zones for recreational activities; 4) resultant increase in management effectiveness for both public and private lands consolidated in either the consolidation or disposal zones; 5) overdraft of the ground water aquifer in the Mojave River basin if additional development occurs; 6) continued and enhanced ability of DoD agencies to perform test and training missions; and 7) consolidation of Western Mojave saltbush habitat.

4.9 SIGNIFICANT ENVIRONMENTAL EFFECTS OF THE PROPOSED PROJECT

Positive environmental effects of the proposed project for archaeological and historical resources include an increased number of previously unrecorded sites on BLM managed lands, better landownership patterns for management for the identified cultural resource polygons, and the potential for more effective protective management of the resource base because of consolidated and contiguous patterns. On the negative management side, some resources would be transferred from public to private ownership in the disposal zone. As indicated by Tables 4.3 and 4.4, however, gains in ownership of known sites and in relative percentage of ownership of cultural resource polygons in the preferred action (Alternative VI) represent significant increases over the No Action alternative.

Some paleontological resource localities may be transferred from public to private ownership. Similarly, some localities now in private land holdings may become public property. Consolidation of public land holdings will permit more effective management of paleontological resources on both consolidated and retained public lands. Additional information on paleontological resources and significance will accrue from analyses of those resources located on public lands in disposal zones during the site specific exchange phase.

From a wildlife standpoint, the areas to the south and west of Edwards Air Force Base would be used for development resulting in habitat losses. In Alternatives II, III, and IV, the riparian habitat along the Mojave River could be severely impacted. This would result in a loss of habitat for the Mohave vole and other species of the riparian area.

Desert tortoise habitat is impacted by all alternatives. Habitat losses are less severe in Alternatives II and V. Under all alternatives, desert tortoise habitat will be impacted in some locations and habitat protection will be enhanced in other areas through inclusion in consolidated public landownership. Consolidated landownership, with associated management practices, will facilitate management of large areas of contiguous lands for specific (to be identified) management objectives.

From a botanical standpoint, significant positive environmental effects of the proposed project may well include an increased number of previously unrecorded sites for rare plants on public-managed lands and better landownership patterns for management of identified unusual plant associations (i.e., Western Mohave Saltbush). More effective protective management of rare plants due to consolidated and contiguous patterns of landownership should also occur. On the negative side, some yet unidentified resources may be transferred from public to private ownership in the disposal zones. Based on knowledge from compilation of botanical records from numerous sources, however, the gains in effective management of known resources in the preferred action (Alternative VI) represent significant increases over the No Action alternative.

4.10 SIGNIFICANT ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED IF PROJECT IS IMPLEMENTED

An unknown number of archaeological and historical sites may be transferred from public to private ownership in disposal zones following site specific mitigation.

Some paleontological resources may be transferred from public to private ownership following site-specific mitigation. Long-range research potential for such resources may be affected.

From a wildlife standpoint loss of some of the protective habitat in the vicinity of Harper Dry Lake cannot be avoided if any alternative is selected. Some of the riparian zone along the northeastern section of the Mojave River upstream from Barstow would be lost.

Desert tortoise habitat will be lost under any alternative including the No Action alternative. Loss of habitat by piecemeal exchanges is possible under current management.

4.11 MITIGATION MEASURES

Mitigation measures in regard to resources of concern are presently focused on the transfer of public land to private ownership. Regulations and guidelines for mitigation are explained in Section 1.3.

Mitigation of operations to allow for modifications of structure height to eliminate adverse effects within airspace corridors is possible for discretionary mineral actions such as leasing and permitting approvals. Operations conducted under the authority of the General Mining Law of 1872, however, are modified or denied only insofar as they do not cause unnecessary or undue degradation as defined in the regulations at 43 CFR 3809.0-5(k) and 3802.0-5 (1). Operations must be approved or allowed if they are not causing unnecessary or undue degradation even though they may conflict with airflight corridor height restrictions.

4.12 NON-SIGNIFICANCE OF EFFECTS

Based on information presented in Chapter 3 - Affected Environment, and a review of all resources of concern, a determination has been made regarding resources to which no impact could be associated. These resources are: Native American values; threatened and endangered plants; utility corridors and access; soils; and noise.

4.13 GROWTH INDUCING EFFECT OF PROJECT

Availability of large, contiguous blocks of private land are subject to development under existing and/or proposed county General Plan Elements. Availability of these blocks may reasonably result in development of these areas (e.g., housing, commercial, or industrial) under private ownership. Presence of this development is assumed to result in the purchase of homes and a concomitant increase in need for services.

This is a question of the balance between nature and development, the more land available for development, the less left for wildlife habitat. The converse is also true. However, with a good balance between the proposed development areas and the wild areas of the consolidation and retention zones, most values could be protected. The consolidation of the public land disposal areas, on the other hand, would probably enhance the economy of the areas west of Barstow, west of Victorville, and south of Edwards Air Force Base.

While much of the land in this area is accessible to development, the potential for large scale development, with or without the proposed land transfer is not immediate. The primary constraint to future development is the limited availability of water in the Mojave River Basin. Prior claims for scarce water resources elsewhere in southern California make it unlikely that additional resources can be secured at acceptable economic

and environmental costs. Thus while much of the land that would be transferred to potential private use is adjacent to the Mojave River and would be accessible to development, the probability of major agricultural or commercial development in the impact area is constrained by the limited supply of existing water.

Currently, approximately 19,000 acres are in agricultural cultivation in the Mojave Basin, with the primary cash crop being alfalfa. It is likely that increasing demands for commercial and residential development owing to the increasing urban spillover in the area would discourage significant agricultural development resulting from the proposed land transfer. Extractive industry in the impact area is neither capital intensive nor labor intensive, and any advantages that may accrue as a result of consolidation of adjacent private holdings should have little spillover affect on the local economy. Further growth in manufacturing and distribution industries in the area may be anticipated but are not likely to be appreciably affected by the LTA Project.

There is no evidence to suggest that the proposed LTA Project should appreciably accelerate growth patterns in the Mojave Basin. It should be noted, however, that much of the land in the proposed transfer that would become accessible to private development is more immediately accessible to Victorville and that part of the potential impact area that is experiencing the greatest growth. The proposed land transfer should enhance the flexibility of local zoning authorities in the immediate growth area to accommodate anticipated increasing growth. The localized distribution of anticipated continuing growth in the urban center of San Bernardino may be affected by the LTA Project resulting in greater flexibility to private developers and increased autonomy to county government in defining zoning regulations. There is, however, no immediate evidence to indicate that the LTA Project will significantly increase or decrease the overall growth potential of the LTA Project Area.

5. AGENCIES, ORGANIZATIONS AND INTERESTED PARTIES

5.0 EIS/EIR RECIPIENTS

In addition to interested individuals, comments on the Draft EIS/EIR were requested from the following agencies and interest groups.

5.0.1 ELECTED OFFICIALS

5.0.1.1 Federal

George E. Brown - Representative
Alan Cranston - Senator
Jerry Lewis - Representative
Pete Wilson - Senator

5.0.1.2 California State

Ruben S. Ayala - Senate
William Leonard - Assembly
H.L. Richardson - Senate
Phil Wyman - Assembly

5.0.2 GOVERNMENT

5.0.2.1 Federal

Bureau of Indian Affairs
Bureau of Mines
Department of the Air Force
Department of the Army
Department of the Navy
Environmental Protection Agency
Federal Aviation Administration
Fish and Wildlife Service
Forest Service
   Angeles National Forest
   San Bernardino National Forest
Marine Corps
National Park Service

5.0.2.2 California State

Air Resources Board
Department of Fish and Game
Department of Parks and Recreation
Department of Transportation
Division of Mines and Geology

California State Cont'd.

Local Agency Formation Commission
Native American Heritage Commission
Off-Road Vehicle Association
Public Utilities Commission
State Attorney General
State Clearing House
State Highway Patrol
State Historic Preservation Office
State Lands Commission
State Planning and Research
South Lahontan Regional Water Quality Control Board

5.0.2.3 County

Kern and Los Angeles
- Board of Supervisors
- Planning Department

San Bernardino
- Agricultural Commissioner
- Board of Supervisors
- County Museum
- Department of Regional Parks
- Department of Waste Management
- Farm Bureau
- Office of Planning, Land Management Department
- Sheriff
- Transportation Department

5.0.2.4 Local

Chamber of Commerce
- Adelanto
- Barstow
- Victorville

City of Adelanto
City of Victorville
Los Angeles Department of Water and Power
Office of the Mayor
- Adelanto
- Barstow
- Lancaster
- Ridgecrest
- Palmdale
- Victorville

5.0.3 INTERESTED GROUPS/ORGANIZATIONS

All American Pipeline Company
American Borate Company
American Motorcycle Association
American Wilderness Alliance
ASARCO, Inc.
Associated Blazers of California
Atlantic Richfield Company
Beaver Resources Inc.
California Association of 4WD Clubs
California Cattlemen's Association
California Desert Coalition
California Federation of Mineralogical Societies
California Mining Association
California Native Plant Society
California-Nevada Snowmobile Association
California Portland Cement
California Turtle and Tortoise Club
California Wilderness Coalition
California Woolgrowers
Cal Mat
Citizens for Mojave National Park
CM Engineering Associates
CoCa Mines, Inc.
Copper Queen Mining Company
Defenders of Wildlife
Desert Citizens for Better Planning
Desert Protective Council
Desert Studies Consortium - Cal State Fullerton
Desert Survivors
Desert Tortoise Council
Desert Tortoise Preserve Committee
Desert Tortoise Reserve Association
Earth First
Eastern Sierra Task Force
Ecology Center of Southern California
Ecology Task Force
Federation of Western Outdoor Clubs
Friends of the Earth
Friends of Wildlife
General Telephone Company
Kern County Woolgrowers
Kern River Gas Transmission Company
Kerr-McGee Chemical Corporation
Lunar Landyacht Club
Mineral Exploration Coalition
Mojave Desert Resource Conservation District
Mojave Pipeline Gas Transmission Company
Mojave Water Agency
Motorcycle Safety Federation
National Audubon Society
National Outdoor Coalition
National Wildlife Federation

INTERESTED GROUPS/ORGANIZATIONS CONT'D.

Natural Resources Defense Council
Off-Highway Vehicle Advisory Commission
Pacific Gas and Electric Company
Pacific Telephone Company
PFC Development Corporation
Pfizer Minerals, Pigmentation and Metals
Phillips Petroleum
Pluess-Staufer, Inc.
San Bernardino Associated Governments
Santa Fe Pacific Realty Corporation
Southern California Association of Governments
Score International
Sierra Club
Sierra Club Legal Defense Fund
Society for California Archaeology
South Coast AQMD
Southern California Edison Company
Southern California Gas Company
Texaco Petroleum, Inc.
The Nature Conservancy
United Four-Wheel Drive Association
United Mining Council
U.S. Borax
U.S. Ecology
Victor Valley 4-Wheelers
Western Mining Council
The Wilderness Society
Wild Horse Organized Assistance, Inc.
Wildlife Management Institute
Wildlife Society
World of Rockhounds Association

5.0.4 LIST OF INDIVIDUALS

A complete list of individuals is available from the Bureau of Land Management, Barstow Resource Area Office, Barstow, California.

5.1 LIST OF PREPARERS

Dave Carlson (2 years experience)
(Socioeconomics)

B.S. Business Economics, North Dakota State, 1968
M.S. Sociology, North Dakota State, 1972
Doctoral Candidate Sociology, Utah State University, 1986

Responsible for data collection for socioeconomic concerns and resource areas. Development of population data and analysis.

David Dennis (4 years experience)
(Data Processing)

B.S. Computer Science, University of West Florida, 1985

Provided a wide range of data processing assistance in preparation of tables, graphics, and publishing.

Darcy N. Devroy (3 years experience)
(Wildlife)

B.S. Water Resources, University of Wisconsin, Stevens Point, 1982

Responsible for preliminary screening of wildlife data for description of affected environment. Assisted in assessment of environmental consequences.

Elayne Eskald (20 years experience)
(Word Processing/Publication)

Responsible for final typing of draft manuscripts, table preparation and editing. Provided assistance in the publishing of the final document.

Lois Gunnell (8 years experience)
(Word Processing)

Responsible for preparation and typing of draft manuscripts, table preparation and preliminary editing.

Roy Harniss (21 years experience)
(Range/Grazing)

B.S. Range Management, Utah State University, 1965
M.S. Plant Ecology, Utah State University, 1968

Responsible for collection and interpretation of baseline data regarding range and grazing allotment resources. Provided majority of impact into assessment of existing range status and determination of environmental consequences.

Richard Hawkins (30 years experience)
(Hydrology)

B.S. Forestry, University of Missouri, 1957
B.S. Civil Engineering, University of Missouri, 1959
M.S. Watershed Science, Colorado State University, 1961
Ph.D. Watershed Science, Colorado State University, 1968

Responsible for data base and interpretation of information on surface and ground water resources. Prepared information for inclusion into effected environment section and determination of effects in environmental consequences.

Margaret Hennon (2 years experience)
(Office Administration)

Responsible for preparation and typing of draft manuscript, table preparation and editing.

Sherman Jensen (11 years experience)
(Soils)

B.S. Soil Science, Utah State University, 1977
M.S. Soil Science, Utah State University, 1979

Responsible for development and interpretation of soils data base information. Responsible for preparation of resource description for affected environment and evaluation of environmental consequences.

John Malachek (22 years experience)
(Range/Grazing)

B.S. Texas Tech University, 1964
M.S. Colorado State University, 1966
Ph.D. Texas A&M University, 1970

Responsible for coordination and supervision of range and grazing resource concerns. Provided initial planning input and final review of range/grazing and other biological resource data areas.

Don Myrick (23 years experience)
(Noise)

B.S. Mathematics, Texas Tech University, 1960
M.S. Mathematics, Texas Tech University, 1962

Responsible for data collection and interpretation for noise concerns in the existing environment. Responsible for data interpretation of noise factors with respect to environmental consequences.

Richard Myrick (2 years experience)
(Cartography)

Diploma, Alaska Computer Institute of Technology, 1985

Responsible for digitizing cartographic information for resources, features and land uses into the LTA Project Area digitial data base.

Paul Nickens (12 years experience)
(Archaeology/Paleontology)

B.S. Anthropology, University of Colorado, 1969
M.S. Anthropology/Archaeology, University of Colorado, 1974
Ph.D. Anthropology, University of Colorado, 1977

Responsible for data collection for archaeological and paleontological concerns. Responsible for description of existing archaeological resources and development of mitigation plan for resources impacted.

Alan D. Reed (8 years experience)
(Archaeology/Paleontology)

B. A. Anthropology, University of Colorado, 1976
M. A. Archaeology, University of Colorado, 1978

Responsible for data collection for archeological and paleontological concerns. Responsible for description of existing archaeological resources and development of mitigation plan for resources impacted.

Robyn Reed (10 years experience)
(Editor)

B.S. English, Utah State University, 1970

Responsible for final review of format and copy editing for all sections of DEIS/DEIR.

Ron Ryals (2 years experience)
(Cartography)

A.A. Drafting, Okaloosa Walton Jr. College, 1984

Responsible for digitizing cartographic information into the LTA Project Area digital data base. Responsible for final production of map graphics.

John Shultz (15 years experience)
(Botany)

B.S. English, Humanities, University of Kansas, 1965
M.A. English, Botany, Vanderbilt University, 1966

Responsible for collection and interpretation of plant resource data including rare, threatened and endangered species. Responsible for description of plant resources in the project area and for identifying potential impacts to those resources.

Leila M. Shultz (17 years experience)
(Botany)

B.S. Biology, French, University of Tulsa, 1969
M.S. Plant Systematics, University of Colorado, 1975
Ph.D. Botany, Claremont Graduate School, 1983

Responsible for overall coordination and direction of plant resource data collection, interpretation and presentation. Responsible for assessment of effects on the environment with respect to plants. Responsible for overall assessment of environmental consequences for plant rseources.

John W. Sigler (16 years experience)
(Project Manager/Wildlife/Minerals/Recreation)

B.S. Wildlife, Utah State University, 1969
M.S. Water Quality, Utah State University, 1972
Ph.D. Fisheries Management, University of Idaho, 1981

Responsible for overall project scheduling, consultant work loads and contractual requirements. Responsible for review of all data and discussion impact from resource areas. Responsible for portions of wildlife resource data review and input. Responsible for preparation of minerals and recreation resources section.

W.F. Sigler (40 years experience)
(Coordination/Wildlife)

B.S. Zoology, Iowa State University, 1940
M.S. Game Management, Iowa State University, 1941
Ph.D. Fisheries, Iowa State University, 1947

Responsible for overall review of biological resource data and evaluation. Responsible for review of wildlife data and impact assessment. Assisted in overall project guidance and organization.

Gar W. Workman (25 years experience)
(Wildlife)

B.S. Wildlife Zoology, Utah State University, 1957
M.S. Aquatic Biology, Utah State University, 1959
Ph.D. Wildlife Biology, Utah State University, 1963

Responsible for data interpretation and input for wildlife resources. Responsible for preparation of data to assess impacts on the affected environment. Responsible for coordination of wildlife resource aspects for DEIS/EIR.

APPENDIX A - GLOSSARY

Glossary and Acronyms

ACEC
Area of Critical Environmental Concern - a designated area set aside within any BLM multiple use class for special management to protect specific resources or values.

AFFTC
Air Force Flight Test Center, Edwards Air Force Base, California

Air Space Corridors
Areas used by DoD organizations for above ground testing and training.

Allotment
An area of land where one or more lessee's graze livestock. Generally public land, but may contain private or state lands.

Aquifer
A water-bearing bed or stratum of permeable rock, sand or gravel capable of yielding quantities of water.

AUM
Animal Unit Month - amount of forage required to sustain the equivalent of 1 cow or 5 sheep for 1 month.

BLM
Bureau of Land Management, U.S. Department of the Interior

Biological Environment
Living (plant and animal) resources within the LTA Project Area.

CDCA
California Desert Conservation Area (25 million acres in southeastern California).

CEQ
Presidential Council on Environmental Quality

CEQA
California Environmental Quality Act

California Desert Plan
Final management guidelines for BLM management of the California Desert.

DEIS
Draft Environmental Impact Statement

EIR
Environmental Impact Report (California Law)

EIS
Environmental Impact Statement (Federal law under NEPA)

Edaphic
of or relating to soil

Endemic
A plant or animal species restricted to (not occurring elsewhere) a given geographic location.

FLPMA
Federal Land Policy and Management Act of 1976

Fair Condition
Range status - plant composition of 15 to 39 percent desirable and intermediate species with 5 or more percent of desirable species.

Forb
Any herb that is not a grass or grasslike

Good Condition
Range status - plant composition is 40 percent or more of both desirable and intermediate species with 20 percent made up of desirable species.

Habitat
A specific set of physical conditions surrounding a single species of concern - for wildlife species the major components are food, water, cover and space.

Human Environment
Those resources past (e.g., archaeological) and present (e.g. socio-economic) directly related to man's activities.

Impact
An effect, positive or negative, on a resource.

Ingress
Air space access into an area by aircraft.

LTA
Land Tenure Adjustment

Landownership Pattern
Used in reference to the existing checkerboard landownership pattern in the project area.

Land Use Categories
San Bernardino County areas of designated, allowable uses - includes residential, commercial, agricultural, industrial, etc.

Land Uses and Patterns
Present uses of lands within the LTA such as agriculture, grazing, etc.

Multiple Use Classification
BLM land management designations - L (limited), M (moderate) and I (Intensive) reflect degrees of protection and allowable uses.

NEPA
National Environmental Policy Act of 1969

Off Road Vehicle (ORV)
Any motorized vehicle or conveyance designed to operate primarily off of paved or maintained roadways.

Physical Environment
Abiotic (non-living) resources located within the LTA.

Pre-Planning Analysis
Definition of issues, areas of concern and alternatives.

Public Health and Safety
Addition to the San Bernardino County General Plan to address impacts from DoD overflight activities.

Public Scoping
Meetings and comment mechanism to facilitate involvement of interested parties.

Safety Noise Overlay Designation
Addition to current San Bernardino County (only) General Plan which outlines areas of concern with respect to public health and safety.

Visitor Use Day
1 Visit/1 individual/1 - 12 hour period

WSA
Wilderness Study Area - a designated area set aside within any BLM multiple use class for special management to protect specific resources or values.

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